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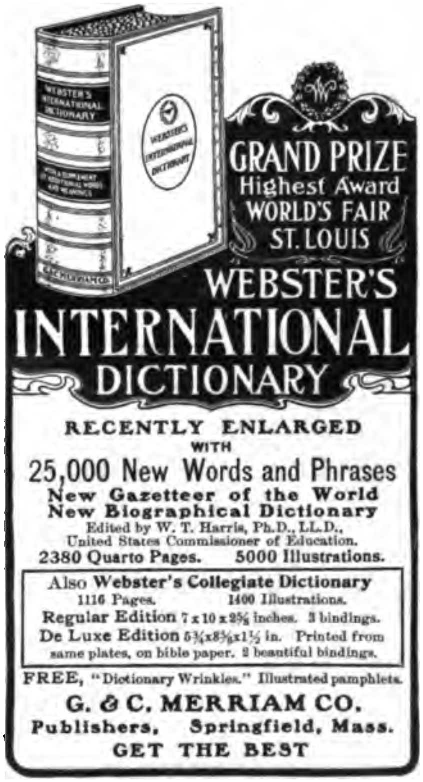

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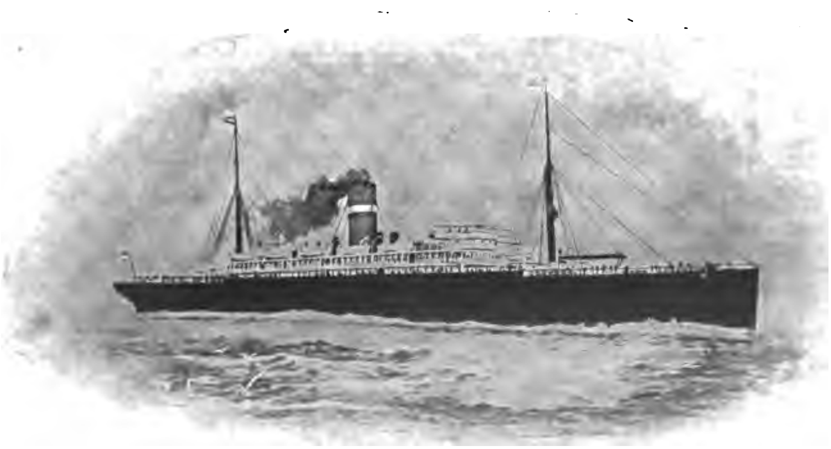

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PEDIATRICS

Vol. XVII MAY, 1905 No. 5

ORIGINAL ARTICLES

SYSTEMATIC EXAMINATION OF SICK CHILDREN*

By James W. Rowe, M.D.,
OF CINCINNATI

The physical examination of young children presents many difficulties, which are, fortunately, not entirely uncompensated by certain advantages. The difficulties arise from the inability of the little patient verbally to explain his symptoms, his liability to become frightened and consequent tendency to cry and struggle. The advantages consist in the impossibility of prevarication or dissimulation and the ease with which he is stripped and moved about. Withal, the undertaking requires patience and peculiar tact.

To begin with, the mother or nurse is called upon to answer a number of questions. If the conversation is carried on in a comfortable way it may do something toward soothing the natural agitation of the child in the presence of a stranger.

It is interesting, at first, to get the mother's view of the case. What has especially excited her alarm? Why has she called in a doctor? These are naturally the first questions, and they are not unfraught with danger, for the answers may mislead the practitioner. It often happens that some striking, but really insignificant condition makes a great impression on the mother's mind, while an important but less showy symptom escapes her entirely.

A few questions about the rest of the family, and especially about the parents, are here in order, particularly with reference to syphilis, tuberculosis and nervous diseases. Some tact must naturally be employed. It is a practical point in this connection that constipation in children may often be explained on the basis of heredity.

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* Read before the Academy of Medicine of Cincinnati, November 21, 1904.

The previous history of the child itself should be investigated, its size at birth, the method of feeding, its rate of growth and development, and any former illness. Previous medical treatment, if this can be discovered, is of great importance. The laity have a well-known penchant for "getting the bottle refilled" without the knowledge of the physician, and great harm may be done by the continued, unguided administration of such drugs, as, for instance, Fowler's solution or Dover's powder.

Finally the present illness is to be considered—its mode of onset, duration, symptoms and severity.

We now proceed to the actual physical examination. Of all methods, inspection is the most serviceable and important, and should be first employed. If the little one is old enough to understand at all, the physician gains something by discarding his professional and searching stare and assuming a more kindly expression of countenance. Before undressing the child at all its head, face, neck and hands may be observed. The baby's head presents a much larger fraction of the entire anatomy than does the corresponding part in an adult, and the information to be obtained from it is very considerable. Eye diseases, skin diseases, facial deformities and blemishes are so evident that they attract attention at once.

Eyes.—Intra-canial diseases are often indicated by the condition of the eyes, *e. g.*, suddenly arising strabismus, unequal pupils, or widely dilated pupils that do not respond to light. In cases with dilated pupils previous medication should be inquired into. It may be discovered that they are due to overdosing with belladonna, administered, possibly, for nocturnal incontinence of urine. The pupils are likely to be contracted in beginning meningitis, and they are always so in opium narcosis and normal sleep. Nystagmus may be a sign of tubercular meningitis or only a temporary neurosis. Corneal ulcer and interstitial keratitis point to congenital syphilis. Eyes that are imperfectly closed, that have lost their lustre and are coated with a film, *ceteris paribus,* betoken approaching death.

Face.—A peculiar expression of attending strictly to business, eyes with a weary but anxious look, flushed cheeks, lips parted and nostrils dilating, speak very forcibly for pneumonia. A face expressive of determination or profound thought, utterly inconsistent with childhood, the head being at the same time drawn back, indicates meningitis. The face of adenoids presents a rather stupid appearance; the anterior nares are generally small, the mouth always open. Puffiness of the face, especially under the eyes, suggests Bright's disease, or too much arsenic. A paralysis of one-half of the face is frequently seen in the newly-born, resulting from pressure by the forceps upon the seventh nerve as it emerges from the stylo-mastoid foramen. The paralysis is easily recognized when the child cries, and may account for difficulty in teaching it to nurse. On the face are observed several distinctive signs of syphilis. A nose, the bridge of which has fallen in, scars around the mouth, extensive sores on the upper lip resulting from the acrid discharge of ozena, and finally in older children the notched upper incisors, all proclaim this disease. The dreadfully emaciated face of chronic diarrhea is only too familiar. Cretinism is by no means a common condition, but its characteristic heavy, unintelligent expression should not be forgotten.

Head.—The inspection of the head will bring out several points of interest. There is great difference in the size of heads, and it is only when the cranium is quite small in comparison to the face and the rest of the body that the head should be styled microcephalic. The opposite condition is more interesting. A very large head, with widely open fontanelles and distinct veins coursing over it, where the forehead seems to overshadow the face, the expression of which is rendered still more peculiar by the presence of ptosis, indicates hyprocephalus. The head of rickets is square, with protruding temples and an anterior fontanelle still open in the third year. A bulging fontanelle indicates increase of intra-cranial pressure. With sufficiently active congestion it will pulsate as well as bulge.

Hands.—A glance may now be taken at the hands. The condition of general nutrition is easily learned from them, and it always inspires a certain amount of confidence in the little patient's constitution if the wrinkle around the wrist, so characteristic of the healthy breast-fed baby, is in evidence. If paralysis exists, the practiced eye may be able unaided to discern whether it is flaccid or spastic, and thus refer the causal leson to its proper centre. Of especial importance are clubbing and blueness of the finger ends, pathognomonic of lung or heart disease.

Neck.—In newly-born babies a lump on the side of the neck is likely to be hematoma in the sterno-mastoid muscle. After infancy swellings in the neck generally arise from enlarged lymph-glands, which may be tubercular or may indicate diphtheria, scarlet fever or superficial lesions on the scalp. Rigidity of the neck is noted, if present, in connection with an abnormal extension of the head. One should remember to look at the back of the neck at the roots of the hair. Scabs and sores here, resulting from the scratching of a chronic eczema, indicate almost infallibly the presence of pediculi capitis, when other signs have escaped observation.

Body.—It is now in order to inspect the child's body, and for this purpose it should be stripped. In the possibility of doing this lies our greatest advantage. It is better, however, to take the child's clothes off in another room and to bring it in wrapped in a blanket. The undressing in the presence of a stranger may cause disturbance.

Skin.—The general color and appearance of the skin is noted; it may be yellow, indicating jaundice; cyanotic, indicating heart trouble; of extreme pallor, indicating some form of anemia. A too moist skin suggests rickets, whereas the skin of chronic diarrhea is dry and harsh. The presence of any form of skin disease is generally apparent at once; the exact diagnosis is often a more complicated matter. The rose spots of typhoid should not be overlooked in cases with fever.

Chest.—On inspecting the chest we first observe the precordia. If it bulges and pulsates to any considerable degree, as it may do on account of the softness of the chest walls, a cardiac hypertrophy is indicated. Pulsation in the vessels of the neck and in the epigastrium are also to be noticed in this connection. In young children, however, the impact of the apex may be seen in the mamillary line, or even beyond it, without indicating any enlargement of the heart. Marked distension of the veins in the upper part of the chest indicate swollen bronchial glands. The child's chest is more cylindrical than the adult's, and as its walls are still soft may present various modifications of form resulting from disease. One side may be smaller than the other, or remain comparatively immovable during respiration as a result of pulmonary disease, *e. g.*, atelectasis, or there may be contraction of one side from old pleurisy or collapse. The chest in rickets shows the well-marked beading along the costal cartilages, known as rachitic rosary, and a transverse groove at about the level of the ensiform cartilage due to the pulling action of the diaphragm. John Thompson, of Edinburgh, calls attention to a posterior beading. The enlargements are not found on all the ribs, and are asymmetrical. They are due to calluses around green-stick fractures caused by careless handling of an already rachitic child. Pigeon-breast is generally due to some chronic interference with respiration, as recurrent bronchitis or protracted whooping-cough.

Breathing.—The character of the breathing is to be particularly observed. It is important to see if the two sides move equally, and if there is any drawing of the epigastrium. The latter, when marked and when accompanied by other symptoms of pulmonary disease, and especially by the action of the accessory muscles of respiration, with sinking in of the supra-sternal area, indicates that sufficient air is not entering the lungs, and is always a serious sign. It occurs chiefly in broncho-pneumonia and laryngeal obstruction. These conditions may be distinguished from each other by the difference in the character of the breathing; that of broncho-pneumonia is rapid and superficial, that of laryngeal obstruction slower and labored, with short inspiration and longer expiration. The latter condition, accompanied by sinking in of the epigastrium, etc., calls for immediate tracheotomy. Infants with dyspnea have great difficulty in suckling. A retraction of the abdomen during inspiration indicates paralysis of the diaphragm.

While observing the chest the rate of respiration should be noted, which in infants under one year is normally thirty-five per minute, and gradually diminishes in frequency as age advances. Respiration may be very rapid in children, reaching eighty or more per minute in broncho-pneumonia. Rapidity of breathing by no means always indicates disease of the respiratory tract, as it occurs in almost any fever. The peculiar form of breathing known as Cheyne-Stokes' may be observed in meningitis, acute or tubercular. There is often a peculiar disturbance in the rhythm of breathing in children with beginning pneumonia. Ordinarily we have inspiration, expiration, pause, but in these cases we have a loud and long expiration, a short inspiration, and then a pause.

Abdomen.—The abdomens of children are always large normally, but may protrude excessively from tumors, gas, feces or fluid. In meningitis, on the contrary, the abdomen is often flat, or even concave—boat-shaped. The navel calls for examination, as the seat of umbilical hernia, and, in infants, of septic infection and bleeding.

Genitalia.—The genitalia are inspected for pathological discharges and deformities, *e. g.*, undescended testicle. In the case of male children it is especially important to examine the prepuce, which may be long, tight, adherent, and provided with too small an opening. A disease indistinguishable from gonorrhea is not uncommon, at least in hospital and clinic practice, in little girls.

Anus.—On looking at the anus, the discovery of a pin-worm may explain a great deal of sleeplessness, and the discovery of a prolapsed rectum a great deal of crying. The common occurrence of intertrigo in this region need hardly be mentioned.

Limbs.—The limbs vary greatly in their form and development, and deformities are frequent from congenital conditions, accident and rickets. In meningitis the feet are often turned with the soles inward, in tetany they are in a straight line with the leg, in hydrocephalus they are much under-developed. Swollen joints may indicate injury, tuberculosis or rheumatism. The discovery of rheumatic nodules is particularly interesting. These are little masses of white fibrous tissue located usually over the patella or olecranon. Periosteal nodes on the tibia indicate syphilis.

Back.—The back offers for consideration the various conditions due to disease or deformity of the vertebral column. There are two of especial diagnostic importance—rickets and Pott's disease. Both are kyphotic, but in the former the curve is wide and will disappear upon pulling the legs, whereas in the latter the deformity is fixed and angular. Lordosis may result from a congenital dislocation of both hips.

Mouth.—The inspection of the mouth and throat may be delayed until the rest of the examination is complete, as the child will almost invariably cry and struggle. Crying is not entirely a disadvantage, for when the mouth is open wide it is possible to get a good look at the interior. The great desideratum is to have the child properly seated on its mother's lap, facing a good light, daylight, if possible. A very clever device for lighting up the oral cavity is suggested by Henoch. He recommends the use of a common candle, the flame of which is backed by the polished bowl of a tablespoon. It is easy to hold both in one hand while the other is busied with the tongue depressor.

Lips.—The lips are first noticed. Herpes labialis or other sores may be present; blueness indicates circulatory disturbance; pallor, anemia. Peculiarities and inflammation of the gums should not escape observation, nor, in older children, mercurial and Hutchinson's teeth.

Tongue.—The tongue of very young infants is always rather dry, and often has a coated appearance. Occasionally the peculiar marked geographical tongue is observed. Abnormal shortness of the frenum may account for difficulty in nursing. It often happens that a refusal to nurse properly, especially in the case of bottle-fed babies, is explained by a comparatively slight catarrhal inflammation at the tip of the tongue. An ulcer under the tongue may occur in whooping-cough. The so-called strawberry tongue suggests scarlatina, and a tongue thickly coated on the dorsum and clean at the sides occurs in typhoid fever.

Palate.—The palate may be the seat of ulcers. Especially should it be carefully examined in cases of suspected measles, scarlet fever, chicken-pox and smallpox. Occasionally the palate shows perforations as a result of syphilitic or tubercular disease. The Gothic arch is usually not marked until after the second dentition.

Cheeks.—The inner surface of the cheeks as well as the other structures in the mouth are examined for the various forms of stomatitis, especially remembering the little white patches of thrush.

Fauces.—Some form of tongue depressor may be used to get a good view of the fauces. A spoon handle is about the best, as it is a familiar object and does not frighten the child. The size of the tonsils is quickly noticed and the presence or absence of white spots or membrane on them. The condition of the soft palate and pharynx is then observed, not forgetting the possibility of retro-pharyngeal abscess.

Palpation.—Palpation succeeds inspection, except that of the mouth and throat, which should be reserved until the conclusion of the entire examination. It is useful in confirming many things already observed, *e. g.*, open fontanelles, beaded ribs, heart impulse, enlarged glands. The hand should be warm and the touch gentle. When search is made for locations painful upon pressure, the child must first be soothed and its attention distracted, so that the discovery of the painful spot elicits the cry. If already crying it is hard to say where the tenderness lies or whether pressure is painful at all. The hand appreciates moisture and dryness much better than the eye, and can also appreciate muscular tone.

Head.—The head is palpated for craniotabes in cases of suspected rickets. A cephalhematoma on the head of an infant sometimes leads to an error in diagnosis from the peculiar way in which it heals. New bone is deposited around the periphery of the swelling while the centre remains soft, so that the impression of a depressed fracture is given, and if the delivery was instrumental the forceps are blamed. Firm pressure over the soft centre will discover solid bone beneath. Palpation is necessary to discover abnormal stiffness of the neck muscles when the head is retracted.

Chest.—On palpating the chest the vocal fremitus may be felt by making the baby cry. A rhoncial fremitus due to the vibration caused by bubbling mucus in the bronchial tubes is occasionally felt. This is rendered possible by the fact that the chest walls, even in well-nourished children, are quite thin.

Abdomen.—Enlarged liver or spleen is discovered on palpating the abdomen. It should be remembered that the liver of a child is, normally, big. If the spleen is enlarged it may signify in acute cases, malaria, typhoid, or tuberculosis; in chronic cases, malaria, syphilis or some form of anemia. Some authors assert that enlarged mesenteric glands may be felt through the abdominal wall, but this must be rather a difficult task unless the abdominal wall is thin, the glands very big and the examiner skillful. Swellings in the groin require the aid of palpation in diagnosis. The cough or crying impulse distinguishes hernia from swollen lymph glands or undescended testicle.

Pulse.—It is sometimes very difficult to feel the pulse at the wrist, and it certainly must require incredible skill to recognize in the tiny pulse of an infant those peculiarities which are described in the pulses of adults. The pulse-rate may be much more easily learned by listening to the heart. It must be remembered that the child's pulse is much more rapid that that of an adult, and that it may be considerably accelerated by comparatively trifling causes. It is better, when possible, to take it during sleep.

The slowing of the pulse in icterus, so marked in adults, is not observed in children, but in convalescence from fevers it may be slowed somewhat. In tubercular meningitis, at the beginning the pulse is slow and irregular, at the end it is fast. In scarlatina the pulse is very rapid. The relation of pulse to respiration should be considered.

Temperature.—Temperature may be approximately estimated by the touch, but the thermometer is much more reliable, and should be used in the rectum. Care must be taken, for a thermometer broken off in the rectum, a circumstance which might easily happen from some unexpected movement on the part of the little patient, would prove a very uncomfortable contingency. One must be on the lookout also for the proximity of artificial sources of heat—hot-water bags, etc.—which might elevate the column of mercury by their too close proximity. The normal temperature varies from 98 degrees to 99.5 degrees. Comparatively slight causes may send a child's temperature to an alarming height, but high temperatures are important only when they are continuous. Abnormally low temperatures are also observed, especially in premature children, in diseases accompanied by much loss of fluid, in starvation and atelectasis, and even cases of pneumonia and meningitis have been reported in which the temperature has been subnormal throughout.

Auscultation.—Auscultation is practiced before percussion. Whether or not a stethoscope is used must depend upon the habits of the examiner. It is a question whether the stethoscope frightens the child more than the proximity of the physician's head when the ear is placed directly to the chest, and there may be some objection on the part of the physician to putting his ear in this position. Sometimes the child may be influenced to play with the stethoscope for a few moments and its fright thus overcome. Some authors recommend an instrument with flexible tubes, holding that the movements of the child cause less embarrassment, as the bell can be held continuously against the chest; others consider that such instruments convey adventitious sounds, and prefer a simple straight stethoscope for one ear. In any case, if a stethoscope is used the bell ought to have a soft rubber rim. The bell of the instrument should be held between the thumb and finger of the examiner firmly against the chest, and follow thus the movements of the patient's body. A very important requirement in the case of a binaural stethoscope is that the ear pieces should fit the ear canals of the examiner. As stethoscopes are not made to order this is left entirely to chance.

Upon auscultating the open fontanelle it is often possible to detect a blowing murmur. While this may be somewhat louder and of more frequent occurrence in rachitic and anemic children, it occurs in perfect health, and therefore has no definite pathological significance.

Heart.—For the examination of the heart a stethoscope is necessary. The difficulty of the task is still further increased by the rapidity of the heart's action. In young children the first sound is louder than the second because the calibre of the arteries is comparatively large and the recoil of blood against the semilunar valves is not so forcible. The pulmonary second sound is louder than the aortic, but not so loud as the first sound in the same area. If, therefore, the pulmonary second sound is as loud or louder than the first, it is to be considered accentuated. Murmurs in the child's heart may arise from three conditions—congenital malformations, acquired valvular defects, or they may be entirely functional. The possibilitiy of anemic murmurs at the base should not be forgotten, but these, together with other functional murmurs, are, according to Henoch, very rare in children under five years of age. During the first few years abnormal sounds indicate valvular lesions. Functional murmurs, when they occur in older children, are, as a rule, soft; loud murmurs, systolic in character, indicate congenital deformity. Diastolic sounds are rare before six years. In contra-distinction to later life, heart disease in children is pre-eminently a wasting disease.

Lungs.—In the examination of the chest for disease of the respiratory system some valuable auscultating may be practiced before putting the ear to the chest. It is of great advantage to listen carefully to the breathing, the cry and the cough.

Breathing.—Snuffling breathing may indicate simply a cold in the head; long continued, it points to syphilis. Snoring in sleep, noisy breathing when awake and a nasal tone of voice indicate enlarged tonsils or adenoids, or in rarer cases diphtheritic paralysis of the soft palate. Noisy breathing with dyspnea will suggest retropharyngeal abscess. Sighing may mean nothing or may announce tubercular meningitis. Stridulous breathing may be due to spasm or to real obstruction. Bronchial wheezing is often audible without applying the ear to the chest.

Cry.—The possibilities of information from the character of the cry have been exaggerated. The cries of hunger, pain and discomfort are often very much alike, and the cry of temper, so-called, in infants is a doubtful quantity. Certainly long experience and great acuteness would be necessary to distinguish them apart, were it not for other accompanying signs. In any case, a loud, lusty yell gives great assurance of the condition of a child's lungs, and if with a vigorous cry flatness or dullness is found in some part of the chest, a pleuritic effusion is indicated rather than disease of the lung itself.

A cry which has long been held of great diagnostic importance is the piercing scream, known as hydrocephalic and characteristic of tubercular meningitis. Similar screaming, however, is heard in middle-ear disease, and the crying of intussusception is also very violent. In marked contrast to these is the crying of pneumonia, which is feeble and interrupted. A harsh, hoarse tone, when chronic, is characteristic of syphilis. Crying from hunger, pure and simple, is usually interrupted by sucking of the fists, and crying which is silenced by placing the baby on its stomach over the knee is generally due to gas in the intestine, *i. e.*, colic.

Cough.—There is some distinction in the nature of the cough, as evidenced by the terms tight and loose. The former is characteristic of irritation in the larynx before much secretion is established, the latter indicates the presence of quantities of mucus. The cough of pneumonia is short and suppressed, because it causes pain. When a child coughs loudly without wincing it is evidence that the pleura is sound. A cough worse at night, occurring in paroxysms, leading to vomiting, is almost certainly whooping-cough.

Direct Auscultation.—Direct auscultation is most satisfactory at the back of the child, because it is so easily held looking over the mother's shoulder. It is, however, not alone sufficient; the front and sides must also be examined. Crying affords considerable difficulty in the way of satisfactory auscultation, yet it offers some compensation in the fact that it forces the child to take deep, long breaths, at which time the conduct of the lungs may be made out. Whimpering is a much greater disadvantage than vigorous crying. For the apices of the lungs a stethoscope is necessary, but for the rest the application of the ear directly to the chest will brobably prove the most satisfactory method.

Auscultation of the lung on the left is rendered difficult by the heart sounds, which are heard all over this side, but even when the heart is heard distinctly over both sides of the chest it does not mean consolidation, for the child's chest conducts sounds much better than the adult's. The fetal chest conducts it even better than the child's.

Although the breath sounds in very young infants may be rather weak, as growth progresses they rapidly acquire a harsh sound, known as puerile, which is to be considered normal. The breathing sounds close to the ear as a result of the thinness of the chest wall. If the two sides of the chest differ in loud ness, the weaker one is to be suspected. Tubular breathing is occasionally met with in pleurisy with effusion, as well as in consolidation. In pleurisy beginning, the friction sounds sometimes fail in young babies, and we must depend upon the appearance of the breathing for diagnosis. The child will give evidence of sudden pain before the completion of inspiration.

According to Holt, the commonest errors made in the auscultating of children's chests are the mistaking of bronchial breathing for friction sounds, of puerile for bronchial breathing, and the overlooking of fluid because bronchial breathing is present.

Percussion.—Percussion follows auscultation instead of preceding it, as is generally the case in the examination of the adult. Care must be taken that the child is sitting or lying straight, so that its sides are symmetrical and due allowance must be made in estimating the value of sounds elicited from deformed chests. The thymus dullness extending down to the third rib in the centre should not be forgotten.

The front of the chest may be percussed with the child lying on its back, but for the sides and back it should be placed in a sitting posture. The pressure on the abdomen, if it lies face downward, will force upward the diaphragm and give rise to sounds abnormally dull.

Percussion should be gently done with warm hands and the pleximeter finger should not press too firmly, as the chest walls are very elastic. The percussion should be light, or superficial areas of dullness may escape notice. The chest should be percussed during both expiration and inspiration, a process which takes patience, as small children have a trick of holding their breath. For obvious reasons the ability to do this is a good sign. Dullness over limited areas may be due to areas of collapse, old pleurisy, or if over the sternum to enlarged bronchial glands. A cracked-pot sound may be obtained from the chest of infants with perfectly normal lungs on account of the yielding character of the chest walls. Especially is this the case at the back between the scapulæ. Further than this, percussion does not differ materially from that of adults.

The examination of the blood, the secretions and excretions, yields very valuable and often indispensable information. The consideration of these matters at length, however, would open up a field too extensive for the limits of this paper.

In dealing with acute cases and attempting to arrange for diagnosis, the facts obtained by careful, systematic examination it is well to bear in mind the commonest diseases of childhood in the order of their frequency—acute indigestion, pneumonia, pharyngitis, the acute infectious diseases, meningitis, tuberculosis, rheumatism and nephritis.

It has not been the writer's object in preparing this paper to present anything new and startling, but rather to recapitulate and rearrange knowledge which has been for a long time lodged in more or less accessible corners of medical brains the world over—a process which, occasionally at least, is not without its merits and advantages.

TREATMENT OF CEREBRO-SPINAL FEVER

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In reviewing the treatment of cerebro-spinal fever we have to consider the management of a self-limited infection of known etiology and great mortality, with a death rate that differs widely in different epidemics. To begin with, we have to confess that the sanitarian, as relates to this disease, is more useful than the therapeutist. The study of epidemics shows that overcrowding, bad ventilation and drainage are largely responsible for the transmission of the affection. A striking illustration of this is shown in the experience of Surgeon C. F. Stokes of the Navy (*Record of the Surgeon-General of the Navy*, 1903, p. 229). An epidemic occurred on board the ship Minneapolis, whose normal complement is 500 men, but which at the time of the outbreak carried 1,450. The disease developed for the most part on the main deck, which was especially overcrowded and lacking in ventilation, whereas in the less crowded parts of the ship the disease made little headway. While this view does not explain sporadic cases developing under apparently good hygienic conditions, there is convincing evidence that isolation should be resorted to wherever possible. Much might be added in support of this apparently self-evident view of the subject. The problem is a familiar one in epidemiology.

Formerly the treatment of the disease consisted in the early employment of blood-letting, either general or local, the use of mercurials in repeated and rather large doses, ice locally, the employment of opium and other cerebral sedatives. In this country the extraction of blood found little favor, and most physicians were content to use mercurials in moderation. Cerebral sedatives, on the other hand, were constantly employed, generally for the relief of the symptoms, pain, coma and convulsions. Of these, opium, as recommended by Stillè, was most largely employed, while others preferred full doses of bromine salts and other antipyrin or chloral. The application of ice to the head and along the spine, or counter-irritation at the nape of the neck with the internal use of ergot, found favor with many.

These measures still have advocates, and there remains a question as to whether their use is to give way to more modern methods. Among the plans of treatment which have of late years attracted most attention, the foreplace must be given, first, to the hot bath as recommended by Aufrecht; second, to spinal puncture and drainage as practiced by Quincke, with or without irritation of the spinal canal with antiseptic solutions and other medicinal agents; and, third, subcutaneous injections of corrosive sublimate.

It seems necessary briefly to review the present status of these methods. First, the hot bath treatment. Aufrecht in 1894 (*Therap. Monats.*, vol. 8), reports a sporadic case, in coma for about eleven days, with weak pulse, subnormal temperature, and grave danger of collapse, in which he ordered the baths at forty-eight degrees Centigrade (104 degrees to 106 degree Fah.), continued for ten minutes. After the first bath the symptoms improved, the pulse became stronger, with decrease and stiffness of neck, and a return to consciousness. The treatment was continued for twelve days, after which the cerebral symptoms disappeared.

Worschiliski (*Therap. Monats.*, vol. 18, 1895,) following the experience of Aufrecht, treated two cases by the hot bath treatment, also employing drugs. In the first case the baths were begun on the eighth day. The same striking improvement was seen as in Aufrecht's cases; that is, an improvement in the pulse, in the comfort of the patient and decrease in the stiffness of the neck and headache. After the eighth bath, the symptoms practically disappeared. Besides the baths, he employed calomel, 0.06 four times a day, enemata, potassium iodide, unguentum hydrargyri and leeches. In the second case the baths were begun on the sixth day. The first was followed by general improvement, the patient sleeping the first time during the illness. The baths were repeated twice daily at the patient's request. On the twelfth day they were discontinued because of the appearance of pericarditis and arthritis of the left side. The headache and other symptoms reappeared so that the baths were resumed on the eighteenth day and continued for three days longer, when the symptoms disappeared and recovery slowly followed. The writer concludes that the hot baths are not contraindicated in pericarditis.

Jerwin (*Therap. Monats*, vol. 10, 1896), reports five cases in which he followed Aufrecht's method with recovery in each case, and says that the indications for their use are subnormal temperature, small, weak pulse, and threatened collapse, headache, stiffness of neck and nervousness. He believes that the baths are without danger.

Wolisch (*Therap. Monats.*, vol 10, 1896), adds the report of seven cases in children treated by Aufrecht's method, with five recoveries and two deaths, a mortality of twenty-eight per cent. He states that one fatal case was fulminating, and that in the other, owing to the objections of friends, the treatment was omitted until too late in the course of the disease. This author believes that hot baths lower the temperature, quiet the nervous symptoms and improve the heart tone.

Netter, before *La Societe Medicale des Hopitaux de Paris*, 1900, reports seven cases, all of which showed the presence of diplococcus intracellularis, in which he combined the treatment of hot baths in conjunction with lumbar puncture. There were five complete recoveries, one with resulting ankylosis in two joints following arthritis, and one in which the result was doubtful. He continued the baths for twenty minutes, and repeated them every three hours.

Turner in his Paris letter (*Therapeutic Gazette*, July, 1900), mentions eleven cases of his own in which seven recovered and four died, a mortality of fifty-seven per cent. But of the four fatal cases, three were under treatment but one day before death.

Schlesinger, Anhauch and Steckel (*Wiener Med. Woch.* vol. 46, 1896), report a number of cases in which the hot pack had been used apparently with relief of symptoms, but with a mortality varying from thirty to forty per cent.

Urban (*Wiener Med. Woch.*, vol. 47, 1897), reports six cases with a mortality of fifty per cent., but believes that the hot bath treatment, Aufrecht's method, serviceable in the relief of symptoms.

E. Blavot (*Centblt f. Bacter.*, July 12, 1901), says that Aufrecht's method combined with lumbar puncture has proved in his hands almost invariably successful even in severe cases. When the condition is grave, he would prolong the bath to twenty-five minutes, and recommends its use every three to four hours day and night, the patient being moved in a blanket. He considers the lumbar puncture of great assistance in diminishing the intra-cranial pressure as well as removing toxic substances. In conjunction he would use salt-transfusions, calomel and opium internally and iodoform locally.

Aufrecht's method does not appear to have been widely practiced in this country, although in a recent discussion before the American Medical Association it was stated that repeated hot baths were recommended and somewhat widely employed as early as 1873 in some portions of this country, and that their use was attended with considerable success. It will be noted that the method of employing hot baths as to duration and frequency varies considerably with different clinicians, and that in some instances the treatment was associated with the employment of drugs. Reports favor the hot bath treatment, and yet the high mortality rate given in some reports is not to be forgotten. Apparently the practice is harmless, is generally followed by the relief of symptoms, and in some instances at least apparently has had a favorable effect upon the course of the disease.

Concerning the treatment of lumbar puncture, Seagers (*Lond. Lancet,* 1902), reports thirty-one cases in which this method was practiced, followed by injections of from nine to twelve cubic centimetres of one per cent. lysol solution. There was a mortality of forty-two per cent., but he explains that the patients were from the lower classes and in bad condition, and occurred in the Lisbon epidemic of 1901-1902. He compares the results with the early treatment by hot baths which gave a mortality of sixty per cent., with simple lumbar puncture in twenty cases which gave a mortality of forty-five per cent., eleven cases with puncture, followed by injection of oxy-cyanide of mecury, which gave a mortality of fifty-nine per cent. The author also refers to the Oporto epidemic of 1901, giving a mortality of sixty-one per cent.

Morris Manges (*Medical News,* May, 1904), reports three cases treated by intraspinal injections of lysol solution with recovery in each case. He expresses the opinion that lumbar puncture is superior to the hot bath of Aufrecht. He uses ten cubic centimetres of the one per cent. solution of lysol. He believes in children the dose should be from three to nine cubic centimetres.

Nammack (*Med. Record,* June, 1904), reports five cases in which he employed intraspinal injections of fifteen cubic centimetres of ten per cent. lysol solution, explaining that the solution employed was through a misunderstanding stronger than he intended. Of the five cases, four died, a mortality of eighty per cent. However, in the same epidemic with various forms of treatment, of twenty-nine patients admitted to the Bellevue Hospital, twenty-four died, a mortality of ninety per cent.

Koplik (*Med. News,* vol. 84, 1904), believes that lumbar puncture is not curative, although most advantageous in diagnosis. He consents to its use for the relief of pressure symptoms. He points out that it is unfortunately unavailing in cases with extreme retraction of the neck with rigidity, the very cases in which its employment would be most indicated to prevent the danger of sudden dilatation of the ventricles. This author quotes Osler, Connetti, Treves and Smith as advising lumbar puncture for the relief of pressure symtoms.

Quincke (*Berl. Klin. Woch.,* 1895), in his original report on lumbar puncture reports its effect on fifty-three cases, from which he withdrew from three to sixty cubic centimetres on an average of twenty cubic centimetres of cerebro-spinal fluid, and considers that it has a therapeutic value in the relief of pressure symptoms. He compares its effect with that seen after aspiration in pleural effusion.

F. H. Williams (*Boston Medical and Surgical Jour.,* vol. 137, 1897), after reporting this form of treatment in thirty-nine cases in the Boston City Hospital, with a mortality of fifty-nine per cent., concludes by advising lumbar puncture for early diagnosis and for the relief of pressure symptoms.

Councilman, Mallory and Wright (*American Journal Medical Sciences,* March, 1898), report that no ill-effects were seen from a large number of spinal punctures made in the Boston epidemic, and quote Williams as believing that the practice is sometimes positively beneficial, referring to a state of quiet and sleep following the operation.

Antony (*Archives de Medicine et de Pharmacie Militaire, Paris,* vol. 42, 1903), after referring to its importance as a diagnostic measure, speaks of the utility of lumbar puncture in the treatment, claiming for it the lessening of pressure symptoms and more rapid defervescence, the disappearance of hyperesthesia and, in some cases, a marked curative effect. He reports five cases of his own with recoveries, two cases without good effect, and two cases still undecided. He quotes the statistics of Chapault, Babinski and Bernard, as reflecting favorably on the effects of lumbar puncture.

Joseph Collins thinks that puncture has little effect in ameliorating the disease (*Twentieth Century Practice*). From these reports it may be learned that the mortality in cases treated by lumbar puncture, or in which lumbar puncture has been practiced for diagnostic purposes, or in which, following lumbar puncture, injections of various antiseptics have been employed, differs but little from the mortality following other lines of treatment.

The treatment by subcutaneous injections of corrosive sublimate is highly recommended by Angyan (Bela) (Abstract from *Medical Record,* vol. 53, 1898). His plan is to inject subcutaneously along the spinal column .01 of corrosive sublimate in the case of adults, and from .0005 to .005 in children, once a day. In severe cases the injections are repeated as often as the fever, headache and stiffness in the neck continues. In subacute cases the injections are practiced until the temperature disappears. He reports twenty-seven cases thus treated with a mortality of thirty per cent.; the injections, varying in number from four to twenty-four, were as a rule well borne. In most cases, after the second or third injection the mind became clearer, excitability was allayed and the pain less marked, so that the patient could sleep. After the fifth or sixth injection, the mind usually cleared up and sleep was still quieter and of longer duration. He did not hold that the treatment shortened the disease, but that it favorably modified its course.

Dazio and Consalivi (*Semaine Medicale, abstracted from the Journal of the American Med. Asso.,* vol. 26, 1896), report nine cases treated by this method with eight recoveries. The diagnosis was not confirmed bacteriologically.

J. D. Smith (*Jour. A. M. A.,* vol. 26, 1896), reports six cases in which he injected one-fourth to one-fifth grain doses hypodermically, with recovery in each. The diagnosis was not confirmed by bacteriological examination.

On the whole the evidence in favor of this method of practice cannot be called conclusive, to say the least. Miscellaneous measures of treatment which seem worthy of consideration are, first, the opium treatment so strongly recommended by Stillè, Whittaker (*Reference Handbook Medical Sciences*), and a host of others, which finds its indication through its anodyne influence, thus sparing the nervous system until the force of the toxin is abated.

A. Steiner recommends ten grains of gum opium at a dose when convulsions are severe, and has found no stupor to result. Chauffard and Boudin from seven to fifteen grains; Stillè one grain every hour and von Ziemssen morphin hypodermically in sufficient doses.

Nearly all practitioners admit the occasional use of opium, but, as will be seen, there is the greatest difference as to the dose and the indications. Perhaps an equally large number prefer bromides in large and repeated doses. With some this is regarded as the sheet anchor in the treatment of the disease. In connection with bromides, antipyrin is advocated, and has been serviceable in relieving headaches, lowering temperature and lessening hyperesthesia. Ergot has been used extensively either alone or with bromides, and like other remedies has found its advocates, while most continental authorities seem to think that mercury in some form or another, usually in large doses, is a necessary method of treatment, no matter what else is done. In spite of this array of therapeutics we find that the mortality continues large.

Antony, before referred to, has collected 508 cases with a mortality of 339, between sixty-four and sixty-five per cent.

When we recollect the difference in virulence in different epidemics, it is easy to understand how faulty notions as to the effect of measures of treatment may gain credence. Nevertheless, a timely review of the subject would seem to warrant the conclusion that benefit does follow certain of these measures, and from my own point of view, I should conclude that the most useful procedure is the bringing about of the best hygienic condition for the patient; that is to say; first absolute quiet in well-ventilated, darkened rooms, with the absence of all excitement and irritation; second, giving the greatest attention to secure the proper performance of the various functions of the body; third, the trial of the hot baths after the method of Aufrecht in all cases where they seem to do good; fourth, the practice of intraspinal puncture, with drainage where necessary to relieve severe pressure symptoms, to be repeated, if necessary, provided benefit follows the first puncture; fifth, the use of antipyrin in cases in which the temperature is raised, not only for the relief of this symptom, but for the mitigation of headache and hyperesthesia. Personal experience has shown me that the drug is also useful in improving the mental state, and it has not been followed, in my hands, by the expected depression; sixth, the use of opium or the bromides alone, or in connection with antipyrin, if necessary for the relief of convulsions, pain, hyperesthesia and pressure symptoms generally, which are not relieved by the foregoing methods of treatment; seventh, the use of mercury when needed for its laxative effect, or to assist in stimulating the organs of elimination.

OCULAR COMPLICATIONS AND SEQUELAE IN MEASLES AND THEIR PROPHYLAXIS.*

By Aaron Brav, M.D., of Philadelphia,
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All infectious diseases of childhood show some signs of their toxicity by a manifestation of ocular symptoms. Particularly are these symptoms well marked in measles. In this rather frequent disease of childhood the ocular conditions manifest themselves early and are characteristic of the disease. The eyes are suffused, red, the conjunctiva, in addition to an increase in its vascularity, is sometimes edematous. The lacrymal glands are over-stimulated so that there is an increase in the lacrymal secretion. The mucous membranes of the nasal duct, lacrymal canal and canaliculi are in a catarrhal state, and the edema interferes with the normal transportation of the conjunctival fluid so that there is an overflow of tears.

There is photophobia due to the hypersensitiveness of the cornea. These are the early ocular manifestations in nearly all cases of measles, making their appearance during the period of invasion, they continue during the second stage, the stage of eruption, and subside during the third stage, the stage of desquamation. These are practically symptoms of a toxic conjunctivitis, the primary cause of which is a toxin circulating within the vascular system. Sometimes the early ocular symptoms do not subside, but rather become intensified during the period of desquamation; especially is this the case in children of weak constitutions, strumous diatheses, scrofulous and tuberculous.

Whenever the ocular symptoms persist during the period of desquamation they are of great importance, and are always fraught with some danger, for in addition to the discomfort they produce they may reduce the acuity of vision, and may cause partial or even total blindness. Various authors place measles as the responsible factor in two per cent. of total blindness. Considering the mildness of the disease, this is an enormous percentage.

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*Read before the Northern Medical Society, Feb. 24, 1905.

Eye symptoms in measles are practically undetermined by both layman and physician. They only serve for diagnostic purposes inasmuch as they appear long before the eruption, long before "Koplic" spots on the mucous membrane of the hard palate are visible. Among the laity they are considered as a physiologic manifestation of a normal childhood phenomenon, and even the physician is apt to forget that they are the result of a circulating toxin within the blood. Many patients that come to the various ophthalmologic clinics, dispensaries, hospitals, and private consulting rooms give, on careful inquiry, a clear history of measles. Some offer the information by saying, "I have been troubled with my eyes ever since I had the measles," or "My child has sick eyes left from the measles," or "The measles got into my eyes," or "I had good eyes until I had the measles."

Often do they call for optical aid because of a reduction in the acuity of vision, and can not be much improved by any lens or combination of lenses. While under careful examination by oblique illumination, corneal opacities, resulting from a healed ulcer that left a cicatricial scar behind, can be demonstrated. The photophobia and discomfort, which as a rule are symtomatic of corneal inflammations and ulcerations, are mistaken by ignorant parents for the ordinary conjunctival inflammation always accompanying measles, so that the condition is often overlooked and these are cases not infrequently met with.

I have met a good number of them in both hospital and private practice. The opacities may be unilaterial or bilateral. In the majority of cases they unilateral. Of the twenty cases on my record, fifteen were unilateral, that is, seventy-five per cent.; as to sex, fourteen were female. In cases of unilateral corneal opacities the defective eye often deviates from its normal axis, producing strabismus, which in the majority of cases is of a convergent type.

The deviated eye is often found to be hypermetropic, of a high or low degree, but the deviation is not caused by the refractive error, but by the centrally placed opacity following an inflammatory condition of the cornea, resulting from measles. This, to be sure, does not occur in the first or second stage, but in the third stage, or post-morbillic stage.

Corneal opacities once formed, and especially if of a marked density, reduce greatly the acuity of vision, the extent of which depends upon the size and site and density of the opacity; it follows then clearly that the treatment must be in the nature of prevention by means of prophylactic measures.

Every case of conjunctivitis requires treatment lest corneal complications set in and damage the eye sight. Why, therefore, should the conjunctivitis of measles be left to kind nature? Every case of ocular complication or sequelæ in measles will show a clinical history of neglect in the beginning and during the entire course of the disease, and therefore they occur mostly among the poor and non-informed. Among them measles is considered a physiologic phenomenon of childhood, rather than an infectious disease, and hence requires no treatment. Preventing measures are unknown to them. At present, among the poor and ignorant a child suffering from measles receives no attention; even in those cases where a physician has been consulted it is only necessary for him to confirm the diagnosis and no further care is required. Some physicians give no instructions in cases of measles, as they are not followed; others gently hint at certain precautions necessary, but they are not heeded.

Rarely in the practice among the poor will the physician, who, by the way, has only made one visit for the purpose of diagnosing the case, give instructions concerning the care of the eye, and even at best he will say, "wash the child's eye with borax water." This order is not followed, and if carried out is not sufficient to prevent complications and sequelæ. There seems to be a belief among the poor that water is contra-indicated in measles. Often the mother will take a rag—and not a clean one at that—dip it in borax water and proceed to wash the eye. It is needless to say that such treatment is of value only inasmuch as it keeps the external part clean, but will have little effect in preventing the development of some more serious ocular condition.

The text books on diseases of children lay very little stress on the care of the eye during any of the stages in measles, and as a result we often find in the clinics the picture of phlyctenular conjunctivitis, eczematous conjunctivitis, keratitis and ulcerations of the cornea. Strabismus is often attributed by the parents to measles. They say, "We noticed the child becoming cross-eyed after the measles;" and I believe this disease to be an important factor in the causation of strabismus.

In some strabismic children the error of refraction is not great enough to be the prime factor in the causation of the deviation of the visual axis. The defect occurs so early in life, about the third or fourth year, when the effort at convergence and accommodation is not greatly strained, so that some constitutional weakness producing paresis of accommodation, which greatly disturbs the relation between accommodation and convergence, must be thought of.

The debility following measles may also act upon the external ocular muscles and weaken them. This, super-added to an error of refraction, is sufficient to disturb the muscle balance and give us the picture of a convergent or divergent strabismus, depending upon which muscle is affected.

Fuchs, in considering the etiology of convergent strabismus, makes the following interesting statement:

"Hypermetropia is not the only cause of strabismus, for if it were all hypermetropes would be obliged to squint. Other factors must conspire in producing this effect. The most important of these factors are those that act to reduce the visual power of one eye, as, for example, when one of the eyes is weaker from birth or when it suffers an impairment of its sight because of disease developing after birth. Among the affections which particularly tend to produce the latter effect is conjunctivitis eczematosa, which leads to strabismus through the opacities of the cornea that it leaves behind it."

Be it remembered that measles plays the most important part in the etiology of conjunctivitis eczematosa. Thus measles may cause strabismus in two ways, first by corneal opacities and secondly the toxemia acting directly upon the nervous element of the intrinsic and extrinsic muscular system, disturbing the equilibrium between accommodation and convergence.

The disease is divided for convenience of description into three stages: (1) stage of invasion, (2) stage of eruption, (3) stage of desquamation. Ocular conditions in favorable cases are of a mild character, and are present only in the first and second stages of the disease, but in many cases they persist in the third stage, when they are of considerable importance. They constitute the ocular complications and sequelæ of the disease. To enumerate them in the order of their frequency they are the following: (1) Phylyotenular conjunctivitis, (2) eczematous conjunctivitis,

(3) marginal blepharities, (4) superficial keratitis, (5) ulcer of the cornea with its occasional bad results, (6) blennorrheal conjunctivitis with corneal complications, (7) obstruction in the lacrymal canal, (8) spasm of accommodation, (9) paresis of accommodation, (10) paresis of external muscles, (11) neuroretinitis, (12) optic atrophy, (13) gangrene of the lids.

Marcel reported a case of bilateral blindness following measles due to an acute degeneration of the retina and optic nerve induced by the toxemia of measles. Groef, Leber and Wood have reported cases of complete unilateral and bilateral blindness. Foster reported cases where the eye was destroyed by ulcerative keratitis.

Corneal complications are very important, as they reduce the acuity of vision, and although rare in the first and second stages of the disease are rather frequent in the stage of convalescence in neglected and strenuous cases. In considering the treatment of the eye from a preventive standpoint it is well to remember the fact that it is the patient that requires treatment, and not the disease.

When summoned to a case and the diagnosis of measles has been made, the physician should immediately inform the parent of the necessity of absolute cleanliness. Those most concerned should be informed of the possible result of a lack of this simple hygienic rule. It would indeed be well to instruct the laity in the hygienic rules essential in this disease. It is a very common disease with a tendency to serious sequelæ of a strenuous character. I have known of no statistics that will give the percentage of corneal opacities resulting from inflammatory conditions complicating this mild disease of childhood, but from my experience I learn that the number is considerable. I have of late met a number of them, and it was this that induced me to bring this practical subject to your notice.

The child's hands should be thoroughly washed three or four times daily, with warm soap water, for children are apt to rub their eyes with their hands and not only increase the irritation but carry infection to them. The face should be kept clean. The child should be kept in a large, well-ventilated room with a uniform temperature and should have a light covering. It should remain in bed for at least two weeks, during which time the toxins are eliminated. The room should be kept shaded; no direct light should be permitted to fall upon the eye. The practice of completely darkening the room I cannot recommend. Light is essential to our lives, and a sick child should not be deprived of it. Full light should be permitted only after the eyes have become normal in appearance and the conjunctival inflammation has completely subsided. By preventing direct light from falling upon the cornea we diminish the photophbia and guard against irritation of the cornea. Always prescribe an eye wash for the children in measles. It has the advantage over the ordinary "borax water," as, being prescribed, it has the necessary instructions how to use it, and the patient is more apt to follow your instructions. Do not allow the use of the rag. In older children the eye cup is very convenient; in younger children, the eye-dropper should be used. The eye should be washed three times daily. A very good antiseptic and soothing lotion is the following mixture:

Acidi borici	*gr. x*
Sodii biborat	*gr. x*
Aqua menth pip	ʒ ss
Aquae camphoræ	℥ ss
Aquae destill	*q. s.* Pint I.

The itching of the eye lids should be relieved by an ointment of vaseline containing ¼ of a grain of yellow oxide of mercury to the drachm. This should be applied at bedtime by gentle massage over the eyelids. This will allay the itching, prevent blepharitis and the glueing of the lids in the morning. Irritating drugs, such as silver nitrate; should not be used. When the congestion of the conjunctivia is very marked one drop of a solution of 1/4000 of the supra renal extract three times daily will afford considerable relief. If the lids are markedly edematous, warm moist compresses will be of great service.

Intense photophobia may be relieved by the instillation of a few drops of cocaine. Should the photophobia persist, always suspect some corneal involvement, and the instillation of one per cent. solution of the active principle of belladonna is indicated. The catarrhal symptoms should be combatted. The nose should receive a daily spray of boric acid solution. This greatly aids in the prevention of any inflammation and subsequent obstruction in the lacrymal sac. Other conditions must be met as they arise.

It is impossible to outline within a limited space a course of treatment for all possible complications. I wish to impress the fact, however, that owing to a large number of corneal involvement the early and apparently harmless eye symptoms should receive full consideration and immediate measures should be instituted to prevent further complications. The lids should always be kept as aseptic as possible. I have of late been using a five-per-cent. solution of argyol in every case of measles. I instill two drops daily; this is a very good non-irritating yet powerful antiseptic.

Children suffering from measles should not be allowed to read or write until the system has completely rid itself of all toxic materials and recovered from the toxemic influence of the disease. The debility affects the ocular muscles both intrinsic and extrinsic, and all possible strain should be prevented. During convalescence, great care should be exercised, as it is during this stage that most ills arise. To improve the general condition of the child should be the aim of the consulting phyisician. Most cases of serious eye complications occur during convalescence in children of strumous diathesis, tubercular, scrofulous, syphilitic and rachtic. With a vitality low and the resistance of the corneal tissue lessened, some form of keratitis is apt to develop which will leave behind some cicatricial scar and reduce the visual acuity.

The physician as a rule is not held responsible for nebulae or maculae corena, as sequelæ to measles; the defect is practically not discovered so soon and at best the general practitioner in this age of specialism is not supposed to know much—according to the opinion of the laity—about the eye, and consequently can not be held responsible. But it is sad indeed to see school children with defective vision with strabismus as a result of some neglect in the care during this apparently mild and frequent disease of childhood. In healthy and robust children a little indifference to a strict regime may be pardonable, but failure to give due warning to parents in cases of ill nourished children of strumous diathesis is morally wrong.

In addition to the local treatment the child's constitution should be built up. During the cold season, cod liver oil should be given in the stage of convalescence and continued the entire season. Nourishment of good quality and in sufficient quantity should be given to overcome the debility. When the oil cannot be used, the following mixture as an alterative and tonic is a good substitute;

Syr. ferri iodidi	m v
Liquor potassii arsenitis................	m ii
Syr. hypophosph	ʒ ss
Syr. simplicis	ʒ i.

This should be given from three to four times daily.

A very important remedy in the stage of convalenscence is bathing. A warm bath should be given daily; this not only facilitates desquamation and prevents the dissemination of the scales, but greatly aids in the elimination of the accumulated toxins which are the principal causal factors in the development of the anemic condition, and the debility so often met with in the postmorbillic stage.

I believe by the method of treatment outlined we shall also guard against the more serious ocular conditions, such as degeneration of the retina chorioid and optic nerve which may and do sometimes cause unilateral or bilateral partial or even total blindness.

SUDDEN DEATHS IN CHILDREN.*

By Charles Macalister, M.D., of Liverpool,
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Sudden deaths among children, although, fortunately, of comparatively rare occurrence, are relatively large in number to the total number of sudden deaths at all ages, but the conditions which occasion them are frequently of so mysterious a nature that I am afraid that to whatever facts I may be able to give authoritative expression, it will be necessary for me to add some more or less hypothetical explanations to account for them. It is owing, no doubt, to the obscurity of their nature that a discussion has been invited at this special meeting, and one hopes that the experiences which will be elicited from gentlemen representing workers, both in the clinical and in the pathological departments of medicine, will greatly help to consolidate and bring to a focus our knowledge of the subject.

I may perhaps be permitted at the very outset of my remarks to digress for one moment, and to direct attention to the fact that, in children who are the subjects of organic disease, it sometimes happens, strange as it may appear, that death may be simulated, and I have had two experiences illustrating this fact. One of these occurred during a period of residency in a hospital, when a night-sister came and reported the death of a child, and asked permission to have the body removed to the mortuary. Fortunately, the suddenness of the supposed death so surprised me that I went immediately to inspect the body, and found the child presenting such pallor, with cold and wet brow, eyes partly open, yet breathing so quietly, and the heart's action so feeble after a crisis, that the mistake did not greatly surprise me. But, although this patient recovered, there can be no doubt that children who are improperly nursed and nourished in the course of severe acute illnesses sometimes die suddenly after the crisis has been reached, or during the period of convalescence. They go out with the tide, owing to the nervous exhaustion or to some degenerative changes in the heart- muscle which have led to its enfeeblement. Faintness and giddiness are very common symptoms in children who have been the subjects of acute disease, even when they have been well cared for, and it is very noticeable in them sometimes that a pulse, which remains good while the patient is still and recumbent, becomes frequent and poor on even slight exertion, betokening a feeble and irritable heart. One could well understand the occurrence of a fatal syncope if such a case were not carefully tended and the strength maintained.

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* Read before the Society for the Study of Disease in Children, Dec 16, 1904.

A study of the excellent Reports of the Registrar-General, unfortunately, is quite unable to help us to elucidate the causes of the sudden deaths under consideration on this occasion, because, for the most part, they have been certified as cases of diseases of various kinds, and, where inquests have been held, no doubt many of them have been registered as due to congested lungs, or to whatever obvious condition has been revealed by an autopsy, or by clinical examination if the child has been seen shortly before death.

In any chapter which has been written on this subject it has been customary to classify the cases as being ascribable to syncope or asphyxia, to pulmonary, gastro-intestinal, nervous, and other rarer causes; but, while recognizing that these may be convenient headings under which to introduce the matter, it must also be recognized that sudden deaths among children are not infrequently due to certain toxic conditions, which it would be difficult to group under any particular system because they tend to affect several, the fatal issue sometimes being put down to gastro-intestinal, at others to pulmonary or nervous, disorders, according to the symptoms which had prevailed beforehand.

My chief reference will be to this class of cases, which has been familiar to me during a considerable number of years in connection with some institutions devoted to the care and keeping of children in which I am interested.

In studying these cases one of the great difficulties to be contended with is the fact that the deaths may take place so suddenly and so unexpectedly, with such trifling premonitions, that the child is not seen by a medical man at all, as the following case well exemplifies.

Last December, while the boys of one of our Industrial Schools were having an entertainment, which had been preceded by a tea, consisting of boiled ham, with sponge cake and bread and butter, one of the little lads was noticed to be coughing a good deal in a way which was described as being rather irritating than distressing. He had previously been quite well, and it was the fact that his cough disturbed the entertainment that directed attention to him. The governor gave him some sweets, which he sucked without relief, and at last he very cheerfully went to bed and took an apple and an orange with him to compensate for the disappointment of losing the fun. Half an hour later the under matron was passing through the dormitory, and noticing the lad in bed lying very still, she went up to him, and, turning his head, found that he was dead. Some fluid escaped from his mouth. Only half an hour had elapsed since the boy left the hall, and in the meantime he had undressed and tucked himself into bed, the apple and orange which he had taken with him being found under his pillow. I, unfortunately, was not notified of the post-mortem examination, which was made by my house physician at the Royal Southern Hospital (by order of the coroner), whither the body was taken, but in his evidence at the inquest he ascribed the death to syncope. There was evidence of bronchial catarrh, but there was nothing in his larynx or windpipe. The stomach was full, and he suggested that the death had been caused by a violent fit of coughing. I should have felt disposed to consider that this death had resulted from laryngeal spasm or from some respiratory obstruction causing asphyxia, but for the circumstance that other somewhat similar cases had occurred in the same and some other schools—so frequently, indeed, that they received the appellation of "rapidly fatal institutional diseases" in a Report (subsequently published as a Blue Book) which was furnished to the Home Office concerning them about eight years ago by Dr. Sidney Coupland. Little light was thrown upon them at that time, but the general impression was that they were pneumonic in character.

At the same institution on February the 13th, 1895, a boy was brought into the sick-ward who had complained of headache to his playmates during the day, and had also been sick. Towards evening, with some suddenness, he was seized with violent vomiting and had some diarrhea. He died within three hours, after becoming in succession quite powerless, deeply livid, and unconscious. There were crepitations throughout both lungs, and the immediate cause of death was asphyxia.

At the post-mortem examination, which was held on the following day, beyond some pulmonary engorgement, nothing was found to explain his death. The temperature was not recorded.

On July the 7th, 1897, a boy, previously strong and healthy, complained of headache on going to bed at 8 P.M. At 10:30 P.M. the master in charge of the dormitory woke the boys to empty their bladders, theirs being a domintory devoted to boys who occasionally wet their beds. This lad again complained of headache, which was evidently severe, because he cried about it. In the early morning of July the 8th he complained to one of his schoolmates that he felt very weak and ill, and at 6:10 A.M. the ward monitor called the ward master, stating that he had found him kneeling by his bedside, trying to get into bed, but so weak that he could not get on to his legs, and had not power to drag himself in with his arms. After lifting him into bed, he was seen to be breathing with difficulty, unable to speak and apparently unconscious. It was observed that he had evacuated his bowels in bed during the night. He died at 7:40 A.M., cessation of the respiration anteceding that of the heart. The temperature before death was 101.6 degrees F. He looked exactly as though he had been strangled or suffocated, the whole body being intensely cyanosed everywhere, the eyes congested, and the veins of the neck turgid. The post-mortem examination revealed a very small patch of pneumonic consolidation in one of the lungs, and both lungs were much congested, a dirty brown fluid exuding from their cut surfaces. The brain and other organs presented no marked abnormality. On November the 11th, 1897, four months after the death of the boy which I have just recorded, another lad, previously perfectly well, complained of sickness on going to bed. He was thought to have a bilious attack, and some simple medicine was given by the matron. He was sick several times during the night, and had a little diarrhea, but towards morning he was thought to be sleeping quietly, and the matron kept his breakfast warm for him. Since, however, he seemed to be sleeping rather too long, she presently went to rouse him, and found that he was dead. I was hastily summoned, and there he lay curled up on his side, livid and apparently suffocated, just as the other boy had been. The body was cold excepting the abdomen, and he had evidently been dead for several hours. The coroner (with a perverseness which is detrimental to scientific investigation, and especially in a case like this, which puzzled us and alarmed us for the health of the whole institution) did not grant a post-mortem examination, and we can only assert on clinical grounds that this and the former case were probably of the same nature, due to the same cause.

I might multiply examples of this sudden and terribly fatal disease by quoting other cases which have occurred in my own practice, or which have been reported to me from various sources. I had a very similar case in the School for the Deaf and Dumb in 1893, and many have come to my knowledge as having occurred in other schools, whether for boys or for girls.

In most of the cases it has not been possible to associate the illness of these children with any obvious cause. On one occasion a drain in the school-yard was open for the repair of some flaw, but the others were unaccountable; nothing could be found in the sanitary conditions so far as drains were concerned, and the food was not apparently at fault. But I found one circumstance which aroused my suspicions and led me to recommend a radical alteration in the school hygiene, the adoption of which has apparently been followed by beneficial results, not only with respect to sudden deaths, but also in the general health of the institution. I refer to the methods of bathing the children.

There were two hundred boys in the school in which the fatal cases which I have recited occurred, and once a week they got a bath, all being bathed on the same day in a plunge bath, containing about three thousand gallons of water which was heated to 90 degrees F. by means of steam. The boys were bathed in batches, those suffering from skin or ear troubles constituting the last batch.

Imagine, gentlemen, the state of that water after being used by even a fourth of the total number of lads—the horribly poisonous organic matter which it would contain, not to speak of the micro-organisms. Drs. Ernest Glynn and J. C. Matthews, in an investigation which they made ("On Bacteria in Public Swimming Baths"*), estimated that each bather shed about six thousand million bacteria, and that the number of organisms in this bath of 3,000 gallons would rise to ninety thousand per c.c.

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* Thompson, Yates and Johnson, Laboratory Reports, 1903.

The bathing arrangements were immediately altered, and the boys are now bathed on three days a week, every lad being washed with soap and water before entering the plunge, and it is very suggestive that whereas the death rate in the school had during the previous five years averaged 2.8 per cent. and only one year had passed without some deaths, which were mostly put down to pneumonia, no deaths occurred for four years and none from diseases of the rapidly fatal type, until the one which I quoted as having occurred a year ago, the cause of which was never ascertained.

I suspect very strongly that the toxin which causes these sudden deaths poisons the respiratory centre, and that the effects upon the lungs, which are noted sometimes as being simply engorged and edematous, at others as presenting perhaps a small pneumonic patch, are not necessarily primary causes of death at all.

I would like to pursue this subject by referring to some cases of toxemia resulting from sewer-gas poisoning in schools, but since none of them were fatal, I fear that I must refrain from enlarging upon an interesting matter and proceed with the material for this discussion. One of the most distressing types of sudden death is that which occurs in infants having all the appearance of robust health, and although a rare event, not a few cases have been recorded. In 1894 Dr. Harris* of Birkenhead spoke at the Medical Institution in Liverpool, concerning the appalling suddenness of the death of a healthy child, aged 5 months, a well-cared-for, well-nursed, closely-looked-after baby, which had no previous ailments. On the day of its death he had been sent for because the child had had a crying night and seemed in pain. Its temperature, pulse, and respirations were normal; the lungs, heart, and other viscera right; the abdomen slightly tender to touch, but without tumefaction; urine said to be scanty. Dr. Harris diagnosed intestinal irritation, and ordered a dose of castor oil at once, and five drops of sweet spirits of nitre occasionally during the day. The bowels were copiously moved, and in the afternoon the child was reported as about himself again. At five minutes to six in the evening it was started with a bottle by its mother, and left taking it on the head nurse's knee quite as usual. At two minutes to six the nurse noticed a change, signalled for the mother, who, coming up at once, saw that it was death.

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* Liverpool Medico-Chirurgical Journal, 1894.

There was no choking, cough, or struggle, and the face was quite pale. The post-mortem revealed nothing wrong with the viscera. The brain was not examined. Dr. Harris said death was from the heart, there was not a trace of asphyxia in it, and he asked the question, "Why should a healthy heart stop without a moment's warning." I think the only rational explanation of a case such as this is the one advanced by Dr. Buzzard about twenty-three years ago, when, in speaking of a rare case of infantile paralysis, in which the face on one side was implicated, he suggested that this affection of the facial muscles was uncommon, because if the nucleus of the seventh was involved, that of the vagus would probably be also affected, and sudden death result. One cannot here enter upon a dissertation concerning infantile paralysis, but the feeling is growing that it results from a toxin the nature and source of which are not at present understood. The fact that instances have been recorded where two children in a family have been simultaneously affected is suggestive, and it seems probable that we shall have to look for some flaw in nursery hygiene to explain this curious and selective poison.

These, gentlemen, are examples of what I mean by rapidly fatal diseases resulting directly from toxic influences, and no doubt there are many others which might be classed under this heading, although they are more evidently associated with infective processes, if not with organic changes in the viscera. We must not forget in this relation the rapidly fatal cases of scarlatina, where the patient dies overwhelmed with the poison, and that occasionally the same event occurs in measles, quite apart from the results of pulmonary involvement. I remember seeing such a case in an adult, a lady who caught the infection from her infant. She had only felt really ill for about twenty-four hours, although she must have been suffering for a few days, because she was covered with rash. On my arrival at the house, she was just dying (having become suddenly worse) from hyperpyrexia, the temperature in the axilla being over 109 degrees F.

In these septic fevers sudden death occasionally results from hemorrhage from the stomach, which comes from small pin-point or pore-like ulcers in the mucosa, which can be seen, if formalin be injected into the stomach immediately after death has taken place so as to prevent post-mortem digestion. These ulcers appear to be embolic, and are usually derived from some local septic focus. I have seen one example in a case of measles, complicated by septic epiphysitis with involvement of the knee-joint where this profuse and unexpected hemorrhage from the stomach took place, and, being uncontrollable, was the cause of death.

There is another hemorrhagic condition which is worthy of note here, because it is quite distinctly a cause of sudden and unexpected death in infants and children; I refer to those somewhat rare cases where after an illness of only a few hours, generally characteristized by diarrhea and vomiting, followed by marked lividity and collapse, and often by the appearance of petechiæ, or bruise-like markings in the skin, the child dies, and the post-mortem examination reveals hemorrhages into the suprarenal bodies; I have seen an instance of this disease, and several have been reported.* Perfectly healthy and robust children are apt to be attacked and die in the most unexpected way. The histories of their cases remind one of the toxic diseases which were related at the commencement of this paper, and no doubt they result from poisons of a similar type; indeed, I omitted to mention in connection with the second case which I quoted that almost immediately after the child died another lad had a feverish attack, accompanied by headache and vomiting, and quickly followed by purpura and thrombosis in the veins of both legs, which rendered him ill for a prolonged period.

I am disposed to believe that some volatile sewer product which gravely poisons the blood may sometimes cause these types of disease, or some poisons of similar character derived from other organic sources.

Before leaving the subject of the toxic and septic diseases which are associated with hemorrhage, I must mention one other case where, in a little boy convalescent from scarlatina, so well that he was able to sit up and play with his toys, life was speedily ended by bleeding which took place from a small sinus in the neck,

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**E. g.* "Some Cases of Hemorrhage into the Skin and Suprarenal Capsules," by Percy S. Blaker, M.R.C.S., and Bernard E. G. Pasley, M.R.C.S., etc., *British Medical Journal,* 1901.

which had resulted from a superficial incision into a periglandular abscess. Colliquative necrosis had taken place unsuspectedly into the carotid artery, and a tremendous hemorrhage resulted which rendered him unconscious, and he subsequently died in consequence.*

Besides the sudden deaths which take place in scarlet fever and measles, I must simply mention in passing that similar events have taken place in typhoid fever in children, especially where the disease has been overlooked or mistaken for simple diarrhea, or some unimportant febrile disturbance. Dr. J. Pearson Irvine, in a paper which he published in the *Lancet* of November, 1877, records a number of cases of sudden death in young children, most of whom were brought in dead in Charing Cross Hospital, and among them were instances in which the pathological appearances indicated that the children had been suffering from enteric fever. Another point which should always be inquired into when sudden dissolution takes place is the possibility of an antecedent sore throat or other indication of diphtheria. I well remember a boy friend of my own dying suddenly after making some effort when he was recovering from what was taken to be a trivial illness, which proved to have been a diphtheria which had occasioned a degeneration and dilatation of his heart-muscle. Another striking case of the same description is recorded by Dr. George Carpenter, in Vol. IV of the "Reports of the Society for the Study of Disease in Children," pp. 127-131, where a girl, aged 7 years, died suddenly from an uncomplicated myocarditis, which probably resulted from an undetected diphtheria.

Fulminating smallpox will rapidly kill children as it does adults. A boy was brought into the Stanley Hospital many years ago, when I was a physician there, in a condition of severe illness, the nature of which was not quite apparent in the out-patient room, but he was sent up to a small ward for observation. The nurse who was attending him left the room for a moment, and, on her return was amazed to find that he had died quite suddenly. The house physician, who alone had seen him, then discovered that there was a rash on the lower part of the abdomen, and he expressed the opinion that the case might be one of malignant scarlatina. No doubt it was an example of the early roseola distributed over the lower abdominal inguinal regions, which is seen in some cases of severe smallpox, for thirteen days afterwards the nurse who had attended him and several others went down with that disease.

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* Recorded in Pendlebury Abstracts, 1885.

Varicella is another disease which, although so unimportant in general, has its serious aspects. Varicella gangrenosa is a very rare condition associated with necrosis of considerable cutaneous areas. I have seen three cases of it, one under the care of Dr. Ashby, when I was house physician at the Children's Hospital in Pendlebury, and the two others in the out-patient room of the Liverpool Royal Southern Hospital; each of these children died quite suddenly of cardiac failure, the result probably of exhaustion. It seems only liable to occur in weakly children or in those who are already the subjects of tuberculosis.

I am afraid, gentlemen, that in permitting me to open this discussion, in the section which refers to organic diseases, you have afforded me so wide a scope that it would weary you were I to deal with the subjects in a very exhaustive way. I have spoken of the toxic and septic diseases at some length because a series of them have come my way, and collective information is sometimes useful, and I shall leave others to relate their experiences regarding sudden deaths connected with the circulatory, respiratory, and the systemic organs, but in speaking of sudden deaths in children who are subjects of diseases presenting well-marked structural changes in the organs, I shall be as brief as possible.

Heart disease in children has not often in my experience tended to cause sudden death. Isolated cases have occurred, and they have generally been in cases of mitral diseases. I cannot say that in any of these cases the death has been unexpected, because almost invariably the children have been bedridden and actually suffering from the results of the disease. There is one case, however, always in my memory which has impressed me with the necessity for carefully watching cardiac cases to which digitalis is being administered. It was in a little girl about 8 years old, suffering from mitral disease, who had been under treatment for some time, and had improved greatly. I visited her late one night when making my rounds as a house physician, and while speaking to her, she suddenly cried out that she was was dying, stood up in her cot and fell down dead. At the post-mortem examination neither ante-mortem clotting nor embolism was discovered, but the ventricle was firmly contracted, and I believe that digitalis, which she had been taking for some time, was probably responsible for it. I have no notes of this case and am speaking from memory concerning it, but the tragic circumstances connected with her death impressed me in a way which renders my recollections of the facts very vivid. It is surprising that the myocarditis which is present to a greater or lesser degree in some cases of acute rheumatism does not cause sudden death in children. The heart affection hardly ever produces symptoms during the course of the fever, but I recently had one boy, aged 12 years, under my care, whose condition gave me great anxiety on account of the irregularity and enfeebleness of his heart's action, with corresponding weakness of the pulse, and impoverishment of the first sound. He was exceedingly breathless on the smallest exertion and tended to faint, so that he had to be kept carefully recumbent. I had no doubt that a serious myocarditis complicated an endocarditis which was manifestly present, but he recovered at last, so far as his immediate condition was concerned, permanent valvular disease resulting from the endocarditis. My impression is that myocarditis is a very dangerous condition, and one which, if extensive, would be very liable to cause sudden death; but as I have said, it must be a rare cause, so far as its connection with acute rheumatism is concerned. In infants congenital heart-disease is a distinct cause of sudden death, if not shortly after birth, within a few months, the symptoms preceding the death often being of a convulsive nature. In older children death is not usually sudden, and in consequence it is fairly common for it to take place in the hospital wards.

Regarding diseases of the respiratory organs, I do not propose to dwell upon the subject of laryngismus stridulus, which, being a spasmodic affection, may fairly be dealt with in connection with functional disorders causing sudden death. There are just three conditions to bear prominently in mind with reference to this system, viz., pulmonary collapse, pulmonary inflammation, and pleurisy. Collapse of the lung is a subject of considerable importance in connection with the so-called death from over-lying, and there is little doubt that some cases which have been ascribed to carelessness and drunkenness have been due to acute congestive conditions with catarrhal secretion and collapse. Brouardel, in his excellent book on "Death and Sudden Death," directs attention to this point and to the necessity for carefully distinguishing these cases lest a mistake should give rise to the assumption that criminal neglect or intent had to do with the case. Infants in a moribund condition are not infrequently brought to the hospital, livid and gasping from this cause, after illness of only a few hours' duration. In wasting and exhausting diseases this same cause of sudden death in infants is of course common enough, but is not one of the unexpected events in these cases. In pleurisy the pain may be sufficient to cause collapse and death, but if an effusion takes place rapidly in a case of acute pleurisy the respiratory distress becomes intense, practically from the collapse of the lung. I recollect seeing a child which was dying after only a few hours' illness from a pleurisy complicating post-scarlatinal nephritis. On withdrawing a small effusion which had taken place, the relief was immediate and permanent.

Regarding pneumonia as a cause of sudden death, excepting in the catarrhal types, it is not usual even in young children, but it certainly occurs and may prove rapidly fatal.

I shall not take up time by dwelling upon the nervous, alimentary, urinary, and cutaneous conditions, nor yet the syphilitic disorders which occasion sudden death; they are mostly well known and I mention them only in case they may bring to mind among those present cases which may be recorded in connection with the subject in hand.

THE TREATMENT OF ACUTE ENTERO-COLITIS.

By J .W. Scott, M.D., of Houston, Texas.

The first indication in the treatment of acute entero-colitis is to empty the stomach and intestines. The stomach can be emptied by allowing the child to drink freely of warm water to which a little salt has been added, or by means of the stomach tube. The former method, when effective, is preferable, in that it is much less disagreeable to the patient, and meets with less opposition from the family. When, however, it fails to empty the stomach thoroughly, which fact is made known by the unusual persistence of the nausea and vomiting, the stomach tube should be used.

The intestines can be cleared of their contents by means of a brisk purgative—either calomel or castor oil. Calomel has the advantage of being easily administered, and not easily vomited. It also acts as an antiseptic, and hinders to a certain extent the further development of pathogenic micro-organisms. Castor oil is quick in its work and has a soothing effect upon the inflamed mucous membrane. In the great majority of cases, especially in those with an irritable stomach, I prefer the use of calomel. This initial purgation should be thorough; because, in addition to removing all irritating matter from the intestine, it sweeps out many bacilli and their toxins.

The bowels having been emptied, it is an almost universal custom to give some astringent and one of the intestinal antiseptics. As for the astringents, such as tannic acid, catechu, kino, etc., I believe they do more harm than good. They do harm by checking and deranging the natural secretions of the upper portion of the alimentary tract, and they do no good because they are decomposed and lose their astringent power before reaching that portion of the bowels where the main pathological lesions exist.

Those astringents, like tannigen, which are supposed to pass unchanged through the stomach and become decomposed gradually in the intestine, have been proven by clinical experience to be of no particular value. As for the so-called intestinal antiseptics, among which may be mentioned salol, salicylate of soda, naphthol, and the various salts of bismuth, I am unable to see what benefit can result from their use. They disorder the stomach, depress the action of the heart, and irritate the kidneys, whose functional activity it is so important to conserve.

It should further be remembered that there are groups of bacteria in the intestinal canal which are not pathogenic, but, on the other hand, are necessary to our well-being. For instance, food stuffs are prevented from undergoing putrefaction by the fermentation of the carbohydrates caused by the bacillus lactis aerogenes and the bacillus coli comunis. These organisms, therefore, protect the system from the auto-infection which would result from putrefaction in the small intestine. Besides this, they kill many pathogenic bacteria, which are taken in by the mouth, and pass unharmed through the stomach. What good, therefore, can result from intestinal antiseptics when, if effective, they destroy not only disease-producing germs, but also those essential to health? Purgation, particularly with calomel, is the only rational method of disinfecting the intestinal canal; because, in addition to emptying the bowel, it stimulates the flow of bile, which is nature's antiseptic, and which is destructive to pathogenic bacteria only. For this reason, in entero-colitis, especially in those cases attended with much fermentation, a mild laxative dose of calomel every three or four days will prove of distinct advantage to the patient. None of the intestinal antiseptics has been so popular with the profession as bismuth, which I believe is prescribed by all physicians at some time during the course of an entero-colitis. Such, at any rate, has been my practice, although I have never observed any benefit from the administration. As an antiseptic, it is the least effective, but the least harmful of its class. As an astringent, it has but slight, if any, power. In fact, long-continued use of bismuth in large doses will frequently prolong a diarrhea instead of checking it. After the stomach and bowels have been emptied, only one remedy has, in my experience, been of much service, and that is opium, which is to be given with great care. Its use is indicated to control the bowels when moving excessively, to relieve severe pain and tenesmus, and to procure the necessary amount of sleep. Of the various preparations I prefer the camphorated or deodorized tincture. Small doses, frequently repeated, until the desired result is accomplished, constitute the best method of administration. Practically every medicine in the pharmacopeia has been at some time recommended in the treatment of acute entero-colitis, which is the very best proof that no medicine has much, if any, effect upon its course of duration. There are other remedial measures, however, not of a medicinal character, which will always prove beneficial.

In the first place, the patient must be kept absolutely quiet. The treatment of any inflamed organ is to put it at rest. This is just as true of an inflamed bowel as it is of an inflamed knee-joint. In order to procure rest for the bowel, it is of prime importance to have the entire muscular system at repose. Nothing diminishes peristalsis so much as complete relaxation of all the muscles. This is amply proven by the fact that the bowels move less frequently at night, when the patient is asleep, than during the day. I believe children with entero-colitis are allowed to move about too much, and they are handled too frequently by sympathetic relatives, who, in their great zeal to be constantly doing something, scarcely allow the patient any time to be quiet. A child with this complaint should be put to bed in a well-ventilated room, and kept there. When necessary to change its position for any purpose, it should be lifted and not be allowed to move itself. In addition to lessening peristalsis, this relaxation of the muscular system saves the child's strength, a point of vital importance in the treatment of the disease. An abdominal bandage is also of great service in the management of these cases. It acts as a splint to the underlying muscles, and thereby helps to keep the inflamed bowel at rest. It also keeps the skin warm and active, serving practically the same purpose the jacket does in pneumonia. The bandage should cover the entire abdomen. It is best made from some material that is soft, yielding, elastic, and capable of being snugly adjusted to the parts.

The kidneys and skin should be stimulated to increase activity, and thus relieve the bowel of a certain portion of its work. The kidney, skin, and intestines are the main emunctories of the body, and when either is inflamed, the other two must be called upon to assist and to functionate for the diseased organ. For instance, in Bright's disease we stimulate the skin and bowels. So in entero-colitis we should stimulate the kidneys and skin.

To increase the activity of the kidneys, I know of nothing better than drinking freely of ordinary pure water. If desired, some of the alkaline mineral waters may be used. To stimulate the skin, warm baths can be given at least once a day, preferably in the evening, when the patient's temperature is usually at its highest point. Cold baths are recommended by practically all of the authorities, but, according to my experience, the warm bath gives far better results; for it not only reduces the patient's temperature, but is unattended with shock, is more cleansing to the skin, and is conducive to a free flow of perspiration.

Another measure of great importance in the treatment of entero-colitis is irritation of the colon, which can be done once or twice daily. Particular pains must be taken to prevent any over-distention of the inflamed intestine, for the stretching of its walls can only result in harm to the patient. The bag of the syringe should not be more than two feet above the child's body. Various medicinal solutions have been recommended for use, but the majority of physicians prefer the normal salt solution at a temperature of about 115 degrees. These irrigations serve to wash away irritating discharges, and to keep the lower bowel cleansed. As a portion of the water is absorbed by the depleted blood vessels, they also serve to stimulate the heart, to dilute the toxins circulating in the blood, and finally to eliminate them through the kidneys and skin.

Now, in conclusion, a few words as to diet. In the beginning of entero-colitis, there is usually great irritability of the stomach. While this continues, that organ must have complete rest. Not even water is allowed. If the vomiting, however, persists for several hours, water must be given by the rectum to compensate in measure for the loss of the body fluids through the bowels. When the vomiting subsides, the patient can gradually begin to drink boiled or one of the alkaline waters. A little later, as the stomach becomes still more tolerant, panopeptone, or some such nutritive elixir, can be regularly administered, but no other food of any description should be allowed until all acute manifestations of the disease have passed. By acute manifestations I mean tympany, watery discharges and high temperature. When these symptoms have subsided, thin gruels and meat juices can be given with safety, and, as the patient convalesces, the normal diet may by slow degrees be resumed. Great care, however, must be exercised along this line, for fear of relapses, which are very common in this complaint. I believe the most frequent mistake made in treating entero-colitis is improper feeding. Undigested foods are given when the digestive powers are in complete abeyance. Instead of nourishing the patient, such foods irritate the stomach, increase peristalsis, and ultimately ferment and decompose, thus adding to the existing auto-infection. The nearer the stomach and intestines are kept empty, the nearer they approximate a state of physiological rest, which, in entero-colitis, is the prime object of all well-directed treatment.

NEW YORK ACADEMY OF MEDICINE.

ORTHOPEDIC SECTION.

Meeting of January 20, 1905. DR. HOMER GIBNEY, Chairman.

ILLUSTRATION CASE.—Dr. Homer Gibney presented the following case from his service at the Hospital for Ruptured and Crippled, with X-ray—girl—five years—admitted to hospital January 11, 1905.

Diagnosis.—Fracture right femur and old fracture of left femur. Left femur fractured two years ago. Found not to have united. Had no pain. Four days before entrance fell and had fracture of right thigh. Had no pain at entrance.

Physical examination shows fracture right thigh, anterior bowing at middle and upper thirds. Linear scar four inches long over outer side of same thigh. Also marked anterior and lateral curvature of left thigh at same level; bone, however, is very firm.

Treatment.—January 17, 1905, right leg by use of traction and local force straightened and bones got in good apposition, and put up in plaster spica, as at present. Subcutaneous osteotomy was done on the posterior half of the left femur at site of old fracture. The bone was then broken backwards and plaster spica applied to that side.

COXA VARA.—Dr. Gibney also presented a case of double coxa vara admitted by Dr. Whitman and operated on by him. Girl—four years. The progressive scissors deformity was not present—the waddle peculiar to congenital dislocation was present in this case, but the tibial curve had been corrected. Physical examination on admission showed marked evidence of rickets, waddling gait and lordosis as in double congenital hip—Trochanters above Nelaton's line both sides. Right and left legs same on measurement. Soon after admission Dr. Whitman did osteoclasis (manual) at the middle of both tibiæ—union firm, put up in plaster of Paris in over-corrected position. Firm union—deformity corrected, and the child was measured for braces which she now wears.

The Chairman said that the interesting feature of this case is that the X-ray shows the right angle deformity of both femoral necks—a rather unusual bilateral coxa vara.

Dr. Whitman said that now that the bow legs had been corrected he should proceed to treat the coxa vara with the idea of replacing the neck of each femur in the normal position, for in his opinion the deformity might later on become progressive. The character of the operation he had described on several occasions—namely, a cuneiform osteotomy at the base of the trochanter, of sufficient size to permit full abduction of the limb.

Deformity Femur.—Dr. Whitman presented an X-ray picture showing thickening, softening and slight deformity of the right femur. This illustrated so-called local osteitis deformans. The patient, a man fifty-eight years of age, had noticed slight discomfort about the thigh for twenty years. For three years this had become more troublesome. There was a slight limp, slight outward and forward bowing of the middle of the femur and one inch of shortening. No treatment other than the avoidance of over-strain seemed to be indicated.

Epiphysitis.—Dr. C. N. Dowd presented a boy who had epiphysitis of the upper end of the humerus, which healed after operation two years ago. The abscess which had followed the epiphysitis had pointed just back of the deltoid insertion. The joint had not been involved. About half the head of the humerus was removed without touching the articular surfaces. Healing was complete in about two and a half months. The speaker particularly called attention to the condition of the shoulder-joint, which was normal; also to the growth of the bone, which too, was normal.

A second case of a similar kind, which was announced on the card but which had not come to the meeting on account of whooping cough, showed also a normal joint and normal bone growth, although the interior of the head of the bone had been completely removed, leaving simply a thin hard shell. He asked the experience of the members of the Section on the effect of epiphysitis on the growth of the bone. He had seen a number of cases in which only a small shell of bone was left and in which the subsequent growth had been normal.

Dr. Dowd also presented a case of epiphysitis of the lower end of the tibia with an X-ray picture which showed a cavity in the bone leading upward from the epiphysis about an inch to the bone surface. The bone below the epiphysial line was cloudy and showed a lack of detail in the picture, but there was no evidence of involvement of the ankle-joint itself. The motion in the ankle-joint was free and not painful. The wound was practically healed. The outer shell of bone above the epiphysial line having been removed for about two inches healing had taken place in five weeks.

The speaker also presented a case of fracture of the external condyle of the humerus, admitted in September, having the ordinary appearance of such a fracture. The arm was put up in plaster in flexion; was inspected in two weeks and put in plaster again for two weeks more. He was unable to gain extension after healing had taken place. He was seen again about December 1, and the fragment could be distinctly felt;

very slightly movable, the arm was still flexed at about 90 degrees. This fragment was removed by Dr. Mathews and was found to consist of a part of the external condyle and about half the capitellum. It had rotated about 90 degrees. Motion was good after this removal. The arm was again immobilized in flexion for three and a half weeks. Motion was now nearly normal. He has been carrying a light weight on his wrist, and extension has rapidly increased in that way.

Dr. Dowd referred to a similar case which had previously been treated in the hospital, and to several which were reported by Kocher and others. He said that he had been interested in this case on more than one account, particularly from having read in one of the most recently and widely circulated systems of surgery the following statement concerning fracture of the external condyle: "The prognosis is unfavorable as the fracture lies partly within the joint and callus production and adhesion may cause permanent impairment of motion; for this reason it is important to begin passive motion as soon as possible—that is, at the end of the second week." He believed that the best way to prevent callus formation was to immobilize the arm until the fragments were firmly united, and quoted his own experience of about 50 cases with only one in which good extension did not result. On the other hand, the surgeons who advocated early passive motion were the same ones who were also removing the fragments of bone frequently because their results were so poor. He felt that it would be advisable for the Orthopedic Section to express an opinion as to the desirability of immobilizing such joints in order to prevent callus formation and thus gain a good result.

Dr. Dowd also presented a case of paralytic talipes equinovalgus, treated by the method which Dr. Whitman advised. The tendon of the extensor hallucis was divided near its insertion, carried through a hole in the scaphoid bone, the end being then brought up and sewed to the upper part of the tendon, making a firm fastening to the center and to the side of the bone.

Synarthrodesis of the astragalo-scaphoid joint was also done. A small filament of the tendon of the extensor hallucis, which was separated from the rest, was left in this patient. The foot had been kept in plaster for three months. He was now walking with a brace, which limited the plantar flexion of the ankle-joint and prevented eversion of the foot, and walked very well.

A case of fracture of the middle of the femur was also presented by Dr. Dowd with practically a perfect result. The X-ray picture showed an oblique fracture, with good apposition. A similar picture, taken after the healing, showed the position was maintained, and there was a slight callus about the fracture. The case had been treated with Buck's extension for two weeks, and then kept in plaster for five weeks. He said that he had noticed that four weeks had been suggested as a time in which bony union is firm in a child after fracture of the femur, but it did not seem to him wise to permit use of such a femur under seven or eight weeks.

Dr. Whitman said that accurate apposition and rest would assure union with the least callus formation, as illustrated by the X-ray picture of the fractured femur presented by Dr. Dowd. He had supposed that early passive motion in cases of fracture involving a joint had been employed rather to push away bone or callus that might prevent motion than with the aim of lessening its formation. Massage, after union was asrured, had of course a very different object.

Dr. Whitman said, regarding Dr. Dowd's case of tendon transplantation, that it was difficult to assure firm ankylosis in children so that in doing this operation he sewed the astragalus and scaphoid with strong silk and fixed the foot in varus and slight dorsal flexion (over-correction). As soon as possible the patient was encouraged to walk about and the longer the attitude was retained, the better, in order that varus should be impressed on the foot by accommodative changes.

In Dr. Dowd's case there was slight flat foot which might be corrected by a foot plate.

Dr. Whitman said that in correcting deformities at the elbow following fracture, the attitude of complete extension was of advantage. This was best assured by a plaster bandage which included the thorax as well as the arm. Complete extension was an awkward attitude for ambulatory treatment, but was not uncomfortable if the patient remained in bed as was usual after the open operation to which he especially referred.

Dr. Myers said he thought the amount of shortening would depend upon how much of the epiphysis had been destroyed by operation or disease; the amount of motion on whether the joint was involved or not, though this rule was not absolute. These cases are quite frequent in tuberculous children following strains and the results usually much better than in the hip. The speaker remembered two cases about twelve years old now, and it would be impossible to say anything had occurred at that joint, whereas, in another the limb had been shortened at least three inches in its development. This case had undergone two scraping operations in that region, and probably most of the epiphysis had been destroyed.

Dr. Sayre said that in his experience if the disease has been so extensive as to either obliterate the epiphysis of itself or to cause it to be removed by surgical intervention there has been very material reduction in the growth of that limb. It does not at all times follow when the disease is situated in the neighborhood of the epiphysis that by removal of the diseased tissue the epiphysis is sacrificed. In those cases he thought we still had, sometimes, the same rate of growth in the leg. He had operated on an ankle in a boy a little older than the one presented this evening, scooping out the lower end of his tibia to remove a tubercular focus. At the present time the patient is a medical student, with legs of absolutely normal length. About five years ago the speaker had scooped out the head of the humerus in a girl twelve years of age. The last time he had seen the case there had been no appreciable diminution in the length of that humerus. In a good many other cases there had been very marked diminution in the growth of the bone after such operations.

In some cases of hip disease one sees a very marked atrophy of the femur, very marked shortening, although the case has been rather a mild one and the acetabulum and the tip of the femur have been very little involved, but the epiphysis evidently very much demoralized both from appearance as shown in X-ray and diminution in growth of the leg. A very much shortened femur on that side was sometimes accompanied by very excellent functional result.

Dr. Sayre said Dr. Dowd showed that case of elbow, as he understood, to get the opinion of the Section as to the result of movement of fragments soon after fracture in regard to the production of callus. It seemed that the irritation of the two extremities of broken bone was one of the surest ways of producing callus. It is certainly one of the well-recognized facts when we have non-union in fractures after a number of weeks, that we irritate the ends of the bones in all possible ways—stick needles in them—drive electric currents through them—rub them with the hands, to start up callus.

Judging from practical results he had seen, there was much freer motion in fractures of the joint, when left severely alone after fracture, placing fragments in as nearly normal position as possible, keeping them quiet to get a good union, rather than taking them down at the end of a fortnight to move them. It has been fashionable in recent years to take fractures down very soon after the injury, in a fortnight, we will say, and begin to move them, and that was the plan a number of years ago. Then it became less fashionable in this country and the doctrine of rest after replacement was preached very forcibly by a great many gentlemen. Abroad they recently have become enamored of the idea of manipulating the fragments and moving the joints very soon after fracture with the idea of preventing ankylosis.

The reason for moving these fragments in the neighborhood of the joint as given by those practising in this country was not to prevent the formation of extra callus in the joint, but to keep the joint itself limber so it would move, and the ligaments would not set up fibrous ankylosis. The idea of motion of the broken part diminishing the formation of callus was new to the speaker and he was surprised at Dr. Dowd having said that Von Bergman gave that as the ground-work of his treatment.

Dr. Fiske said he did not know of any more difficult fracture to treat than that of the external condyle of the humerus. In those cases involving joint surfaces there is generally a good deal of displacement, for that reason we have poor results due to the amount of callus which is large because it is almost impossible in some cases, to effect perfect apposition of the fragments. It seemed to the speaker that any such fracture with fragments displaced should be reduced while the patient is under an anesthetic. He said he made it a rule in attempting to effect reduction. In many cases it is impossible in spite of the greatest care in manipulating, to effect exact reduction. In most cases he placed the arm in the right angle position. In two weeks, when changing the dressing, he attempted to drop the arm 20 or 30 degrees. He thought this method eventually gave a better result than when the arm was kept in one position four or five weeks.

He said he was not in favor of early massage, but thought the joint should have twenty-eight days of absolute fixation.

Ruptured Achilles Tendon.—Dr. Fiske presented a man who, about eight days ago, attempted to perform an athletic feat by which the Achilles tendon on the left side was put under great strain. A physician called in to look at the case decided that nothing very much was the matter. Dr. Fiske, after a few days, saw the man for the first time, and discovered that he had practically complete rupture of the upper portion of the Achilles tendon, but had good function. It was a unique case. He had attempted to jump up against a wall and placed his foot against the wall. The shoe he had may have caused pressure, cutting him.

Dr. Whitman said this case brought up a point in favor of subcutaneous tenotomy in that it demonstrated how one may divide a tendon and leave the sheath to preserve continuity. He said he would fix the foot in slight equinus until the tendon had united—the calf muscle would meanwhile accommodate itself to the elongated tendon. The man, in his opinion, should not walk without support, for fear of breaking the sheath.

Dr. Sayre said a number of years ago this question of immobilization of the tendon after tenotomy occupied a great part of orthopedic literature.

Mr. Adams wrote a long work on the subject of tenotomy which received a prize, in which he proved conclusively, he thought, that it was necessary immediately to approximate the fragments after a tenotomy, in order to get union. In the Appendix he spoke of Mr. Rolfe Cox, a veterinary surgeon, who operated on race horses who had equinus. He cut the flexor perforans tendon, cut off the overgrown part of the hoof and allowed the horse to stand on his foot and run about the field at once. The horse soon recovered with a good tendon, winning a race the next year. This showed that the approximation of fragment as argued in the first part of the book, was not necessary in quadrupeds. It is not necessary, either, in bipeds. If one divided a tendon and covered the gap between the ends with a firm dressing and thus left a space to be filled in with blood it would afterward organize in a good piece of tendon. After 18 days, in rabbits, it is difficult to see with the naked eye that there has been a break. In three months one cannot detect the union under a microscope. On the contrary, if one put a tight bandage around the part with a protecting roof over the gap, and keep it there, the space would be occluded so no opportunity was allowed for effusion into the gap, and cases thus treated might result in non-union.

Dr. Ogilvy cited a case in which a heavy woman was allowed to walk in seven days after the snapping of the tendon. She could not raise herself on her toes, and the tendon was not half as strong as before rupture. This result he thought was due to the fact that she had been allowed to walk too soon.

ANKYLOSIS HIP JOINT.—Dr. H. W. Frauenthal showed a girl, aged ten, asking for suggestions, in whom both hip joints were ankylosed at right angle. Her trouble started in the right hip at three years of age. Had had all kinds of treatment. For the past three years no treatment at all. It was a case of neglect, sent to the speaker to see if anything could be done for her.

Dr. Charles Ogilvy presented a case of congenital dislocation of the hip operated on in October, 1901, by Dr. Phelps, open method. The patient was admitted six weeks before operation, during which time between six and eight pounds' weight was put on the leg. The Hoffa open operation was done except that the Duyon excavator was used. The neck of the bone had an anterior twist. The head set more perfectly in the acetabulum by having the leg rotated inwards and the leg was put in plaster, remaining three months, after which time a Phelps' hip splint was applied. This was kept on for six months, making nine months of fixation altogether, after operation, after which time the child was allowed to walk without further apparatus. The result is perfect.

Dr. Ogilvy showed another case operated on by Dr. Phelps, open method, in December, 1901. For six weeks a plaster of paris spica was applied; after that the plaster was removed and a hip brace was applied as in the other case. The brace was kept on for six months. In July the brace was removed.

On December 12, 1902, Dr. Lorenz operated on the other side. At the time of the operation he mentioned the fact of the acetabulum being particularly shallow, and said it was wiser to keep on the plaster of paris as long as possible, even if it had to be renewed—that it should be kept on for at least nine months. She was treated as he advised with the results as shown.

Dr. Whitman said that he was glad to see such good results from the open method. He thought that it should follow the Lorenz operation when that had failed. He did not think the Lorenz attitude the cause of anterior displacement ordinarily, but rather the deformity of the neck and head of the bone. In the bilateral cases shown there was slight anterior displacement on both sides. On the side in which the acetabulum was excavated there was a bony outgrowth which gave the femur a more secure support.

Dr. Whitman said that in a number of instances he had operated for this twist of the upper extremity of the head of the bone. He had opened the joint, enlarged the acetabulum when necessary and replaced the head of the bone by rotating the limb inward. Subsequently the normal relation was restored by osteotomy of the shaft of the femur. After the joint is open one can see the relation of the neck and head of the bone to the condyles of the femur, and can demonstrate that permanent replacement is impossible unless the deformity of the bone is corrected.

Dr. Sayre said he had heard an expression from Dr. Lorenz in regard to this technique. Dr. Sayre had asked him what his practice was in cases where the anterior twist of the neck of the femur is so great that when one puts the head in the acetabulum the toes are turned inward. In these, if one succeeds in placing the head in the acetabulum the foot must be turned inward and could be straightened only by subsequent osteotomy in the shaft of the femur.

Dr. Lorenz replied that this was the logical mode of procedure, but it did not seem to him to be necessary. What he was looking for was a good functional result rather than perfect anatomical replacement and in his experience he had obtained results functionally satisfactory to the patient by anterior re-position in these cases. He cited a case in which one of his colleagues had followed out partially the treatment just outlined by Dr. Whitman. When he had arrived at the stage where osteotomy should be done the parents threw up their hands at the idea of an operation and went to Vienna where the non-bloody operation was performed, with double transposition, anterior, to the great delight of the parents.

In both of the patients on whom Dr. Lorenz operated for Dr. Sayre at the New York University and Bellevue Medical College, he obtained anterior transpositions. He said that the head of the bone was not in the acetabulum—he did not pretend to have it in there—did not think it necessary to do so, but he said the children would have very excellent, useful legs the way he left them, and that was what all were anxious to have. One case was single, the other double. The "double" child walks a good deal as the "double" child did this evening. The child with "single" hip walks very excellently—runs up and downstairs with hardly a trace of limp. One can see she has not an absolute re-position when her clothes are off, and motion is slightly limited, and there is a tendency to turn the toe too much outward unless she thinks of it. Several people have guessed wrongly when asked which leg, as she ran up and down the room.

Dr. Sayre said he had a case of double congenital dislocation of the dorsum of the ilium, which he saw when the girl, now nineteen years old, was a small child.

The child fell downstairs, thrusting one leg through the banister, severely wrenching the hip. This fall converted the posterior luxation into anterior. That leg was one inch longer than the other, solid and stable, the other slipped around the dorsum of the ilium. She said: "This leg has been all well since I fell downstairs. If you can make the other as good as this, it is all I want." That was the attitude of Lorenz. Dr. Sayre said neither of the cases Lorenz had operated on for him had so good a functional and anatomical result as that of the single open operation shown this evening.

The speaker said he thought Dr. Whitman had stated the case as tersely and as exactly as possible, and he considered it the logical and sensible thing to do in the majority of these cases.

Dr. Ogilvy said he had noticed in looking over statistics of cases operated on by Dr. Lorenz, that the majority resulted in anterior displacement. In several cases he distinctly remembered, operated on by the open method, he found the head and neck of the bone twisted anteriorly. It is easily understood that if these cases, with the neck and head of the bone twisted anteriorly be treated by the Lorenz method, the head of the bone will be anterior and we will have as a result, an anterior displacement. Dr. Ogilvy asked if that were not the reason why there are so many anterior displacements, the result of the Lorenz method. Why will not internal rotation rather than outward rotation obviate this result?

PERIMAXILLARY ABSCESS.—Dr. H. C. Frauenthal presented the case of a young man who came under observation on the tenth of the month. He said he had not opened his jaw for ten days—

perimaxillary abscess. An attempt was made seven days ago to excise the abscess, which broke. The patient was admitted to hospital, for observation. Since the breaking of abscess the jaw can be opened three-eighths of an inch. Has been on soft food for twenty-one days. No temperature, no pain, no septic chills nor anything of the kind. A wisdom tooth extracted nine or ten days ago may have been the cause of the trouble.

SOCIETY FOR THE STUDY OF CHILDREN'S DISEASE.

LONDON, January 20, 1905.

DR. PERCY G. LEWIS, Chairman.

VOLKMAN'S CONTRACTURE.—Two cases of this affection were presented by Dr. F. Jaffrey. One was that of a female child two years old, and the contracture occurred in the right forearm as a result of fracture. The other was a female child seven years old, the contracture occurring under similar conditions.

LUPUS OF THE EPIGLOTTIS.—Dr. W. H. Kelson presented a case of lupus of the epiglottis and left vocal cord occurring in a male child twelve years old. Treatment by galvano-cautery had been employed. The upper part of the epiglottis was lacking, and red apaules covered the stump, as well as the left vocal cord, the anterior commissure and ventricular bands. The patient's sputa had been examined, but no tubercule bacilli had been found. There was no history of syphilis.

AORTIS STENOSIS.—Dr. L. G. Guthrie presented the case of a female child twelve years old, which he diagnosed as an aortic disease, with the belief that some congenital malformation might be present about the aortic valves. A pronouncedly rheumatic condition was evident in the patient. This same case had been brought to the notice of the Society in December, 1903, and on both occasions various differences of opinion were elicited.

DOUBLE AORTIC DISEASE.—Dr. A. Morison presented a case of double aortic disease in a male child of ten years, who also had mitral regurgitation. Some history of rheumatism was given.

CONGENITAL PULMONARY STENOSIS.—Dr. George Carpenter presented the case of a child suffering from this affection, who also gave some evidence of a patent septum ventriculum.

PENO-SCROTAL HYPOSPADIAS.—Mr. Donald Armour presented the case of a male child four years old, for discussion as to the most desirable form of operative treatment, and the age at which it had best be done.

GENERALIZED LICHEN PLANUS.—Mr. G. Pernat presented the case of a male child six years old, suffering from generalized lichen planus of three months' standing. A tower skull ptosis was present, with absence of upper movements of the eyes, and a palate markedly arched. Mr. Pernat also presented a case of circinate gyrate erythema multiforme.

CONGENITAL MULTIPLE OCCLUSION OF THE SMALL INTESTINE.—Dr. J. G. Emmanuel showed a specimen from a child which died at nine days. It was a seven months' infant, and vomited from birth, but passed no stool. An enema secured a copious evacuation of meconium. Atresia of the bowel at the duodenojejunal juncture was complete, the duodenum being hypertrophied and dilated until it exceeded the stomach in size. The jejunum was entirely lacking for about half an inch in two separate places. Five complete occlusions of the gut by annular constrictions in the jejunum and upper part of the ileum were observed.

HEMOPHILIA.—Dr. G. E. C. Pritchard presented the case of a female child six years old. Since infancy the child had suffered from repeated attacks of epistaxis. Hemiphilia was hereditary in the male line for two generations.

FOREIGN BODY IN .THE ESOPHAGUS PERFORATING THE TRACHEA.—Mr. A. T. Marshall presented this specimen, taken from a post mortem child seven months old in whom it had occasioned consolidation of the right lung, ulceration into the trachea and pus in esophagus and trachea.

EDITORIAL

SURGICAL AND ABDOMINAL TUBERCULOSIS IN CHILDREN

The question of tuberculosis among children came up for discussion before the managers of the Metropolitan Asylums District on April 15, and Sir William Broadbent delivered an address in which he spoke particularly of the obligation which rested upon the public in the matter of caring adequately for the children of the poor who are afflicted with tuberculous disease of the bones.

He made the assertion that this type of the disease was particularly susceptible to improvement by the open air treatment, and the result of our own experiments at Coney Island, as shown by Linsey Williams and J. Winter Brannan, would seem to bear out the English physician in this respect. He furthermore stated that the treatment of such cases in the ordinary wards of public hospitals was a waste of time and energy, since the patients treated did not receive any considerable benefit, and merely occupied the space and time which might and should be devoted to other diseases more adapted to cure by such treatment. In addition to the patients thus misplaced in the public wards there are a large number of them remaining in their homes and constituting a heavy expense in households with scanty resources, without any prospect of recovery. These same children, if provided with a proper course of treatment, might be restored to health in a comparatively short time, and cease to be a source of anxiety and expense to their overburdened families.

This problem seems to have been most satisfactorily met in France, where at several places in the vicinity of Paris, at Hendaye in the south of France, at St. Pol in the north and at Berck on the English Channel sanitaria are maintained for the open air treatment of children with surgical tuberculosis. The surgeon in charge of the last mentioned place considers that once the disease is thoroughly established a three years' treatment is necessary in order to eradicate it; but the sanitaria are open not only to those with such pronounced cases, but also to those who show a tendency to the disease or seem to be threatened with it, and these children of course can be discharged with safety much earlier. This same physician, Dr. Ménard has estimated that every large city in which a "slum" population exists, should maintain for every million inhabitants 1,000 beds for children, in seaside hospitals if possible, since not only open air but especially sea air seems to have a beneficial effect upon these cases.

Up to the present time the etiology of surgical and abdominal tuberculosis is not altogether settled in the opinions of scientists. In a recent report to the German Imperial Health Department Kossel, Weber and Heuss confirm the statement of Prof. Koch that tubercle bacilli from a human source are easily distinguished from those from a bovine source. They examined specimens from 56 patients, men, women and children, and found the bovine bacilli in only 6 cases, all in children under seven years old, and five of them showing evidence that the infection was either confined to, or at least began with the intestines or mesenteric glands. The sixth case was one of miliary tuberculosis. In all 18 children were examined, and the percentage of those showing the bovine bacilli together with the seat of the disease which suggests milk as the vehicle of infection, would seem to emphasize the necessity of effectual protective measures aimed at impure milk. That it is not easy to frame measures which are at once practicable and effectual is easily recognized, but the difficulty of the task is no excuse for its neglect. With an assurance of pure milk supply and with a provision for enough beds in seaside hospitals for the open air treatment of surgical tuberculosis cases, the children of the city would have a fair chance of resisting the white plague. Such conditions in their completeness may not be an ideal easily obtained, but one that can at least be approximated.

UNDERFED CHILDREN IN ENGLAND.

In view of the interest recently awakened in this city by the assertion of Mr. Robert Hunter that great numbers of children daily go to school without any breakfast and suffer in many ways from underfeeding, a statement which might have been more effective if it had been possible to secure approximately accurate statistics, a recent letter in the *British Medical Journal* from Leeds where in a limited area some definite facts have been discovered and some definite results accomplished, may prove somewhat enlightening. In this town the matter has been investigated by the Educational Committee who discovered at the beginning of the winter no less than 6,720 underfed children in attendance at the elementary schools. The matter was taken up by the Children's Relief Fund, and dinners furnished to over 25,000 children in one week. Many of the children's parents were out of work, and of these parents only about 12 per cent. were of the "less deserving class."

The most interesting and convincing phase of this work is found in the investigations of Dr. William Hall a retired physician of Leeds. Dr. Hall has taken every precaution to insure correct values in the results of his investigations and has included in them the feeding of the younger children and infants and of the mothers during pregnancy and lactation. He has examined carefully 3,000 children of the locality and arrived at some interesting conclusions.

A comparison of groups of Jewish and Gentile children living in practically identical conditions of locality and poverty showed a distinct advantage in physical development for the Jew. The Jewish child is taller, heavier, possessed of better teeth, less rickety and less apt to be a mouth breather. Dr. Hall believes that this difference is due to the character of nourishment supplied before and after birth. In the class where his researches were carried on he found that, other things being equal, the pregnant Jewess was better fed than her Gentile sister, and seldom unable to nurse her baby, whereas "bottle babies" are found with comparative frequency among the Gentile population. Thus the Jewish baby gets a better start, and after it is weaned its dietary is more rational than that of the Gentile child in the same state of poverty. The latter is compelled to subsist upon "white bread, tea, badly cooked fish, tinned meat and pickles." Small wonder that they are found "on the edge of scurvy." On the other hand the same amount of money will be expended for the Jewish child in procuring bread of wheat and rye mixed, plenty of sugar and usually milk for tea or cocoa. The mothers club together to buy good fish, use vegetables freely and manage to obtain eggs for the children. The consequent superiority of Jewish physique discovered by Dr. Hall should convince the thoughtful that the nourishment of its children is a matter of no small moment to any nation. It would be interesting to discover whether these same differences in diet obtain in America to any extent.

The most encouraging aspect of Dr. Hall's statistics is the prompt response of these half-starved mites to his "treatment," treatment which consisted simply in securing to each child one adequate meal a day. In two weeks children of seven and eight years of age gained at a rate that if continued would have averaged nearly thirty pounds a year for each. This astonishing increase upon the normal gain at that age is accounted for, in Dr. Hall's opinion, by the fact that the tissues of these children, like those of a convalescent, are ready to take up nourishment with avidity.

Later two meals a day were served them, but even then at a cost of about twelve cents. They show unmistakable signs of a greatly improved general condition, and the writer of the letter justly points out that one cannot fail to be hopefully impressed with this evidence that "children who have made a bad start, and who are living on the edge of scurvy, may be, one may really say, rescued" at so trifling a cost.

ABSTRACTS

Incontinence of Feces in Children.—Three instances of this rather rare condition, of which only about a dozen cases are on record, are reported by M. Ostheimer (Univ. Penn. Med. Bull., February, 1905) as occurring in boys ranging from four and a half to ten years. In six months upon nutritious food, tonics, and fresh air, he made complete recovery. The other two boys were otherwise well, with the exception of a general nervousness in one of them. The latter after a time also developed paroxysms of pain with micturition, and often passed bloody urine. After removal of a vesical calculus, he became perfectly well. The author found the best results attended the administration of strychnine and atropine, up to one-tenth of a grain of each daily. Relapses are common and must always be treated in the same manner. Tonics and good food, together with plenty of fresh air, are very important.

Standardized Gruels.—H. D. Chapin (Med. Rec., February 18, 1905) says that with the increased knowledge that has resulted from a careful study of the use of gruels in infant feeding it has become recognized that they have other values than as attenuants of the curd of the cow's milk. They may often be employed to economize the energy of the body that is being used in the effort to prepare food for assimilation, and by taking advantage of this fact it is frequently possible to keep the body well nourished on a quantity of food much smaller than is theoretically indicated. It is highly desirable, therefore, that there should be some uniform standards for use in preparing gruels, and that their food values and possibilities should become better known. With this object in view the author had made gruels containing varying amounts of pearl barley, prepared barley flour, wheat flour, and rolled or flaked oats, which were then assayed to determine their composition in order to show the relative properties of tissue-building and heat and energy-producing elements. The tables obtained are reproduced, as well as others showing simple methods of preparing gruels of any desired strength.

Relation of Epilepsy to Convulsions in Children.—Moon (Lancet, Lond.) urges that a serious view be taken of all convulsions occurring in infancy, and says that we are justified in supposing that even a single convulsion in childhood will end with itself and have no further evil influence on the life of the child. For most of the cases which arise in connection with an extrinsic cause also have a history of heridity or alcoholism in the parents, which are both predisposing causes of epilepsy. Even where there is no such history, and it is assumed that a peripheral irritation is adequate in itself to produce a convulsion in a perfectly normal brain, the mere fact of the convulsions being often repeated makes the brain cease to be normal and creates a distinct pathologic basis for the production of epilepsy. It is impossible to give the precise relation of such convulsions to epilepsy, but Moon believes that a much greater difference is made between these two affections than the facts seem to warrant.

Scarlet Fever.—SEIBERT (N. Y. Med. Journ.) treats extensively of this condition. Among his conclusions are: (1) It is endemic in New York City; (2) most common among school-children; (3) chief centers for contagion are the schools; (4) direct contact is necessary for infection.

Under the head of treatment he uses a 5 or 10 per cent. ichthyol-lanolin ointment applied to the entire cutaneous expanse two to four times daily and rubbed in well; and disinfects the pharynx with a 50 per cent. resorcin alcohol solution; as soon as the throat symptoms appear the patient is placed in the intubation position, a plug of absorbent cotton saturated with above solution is quickly passed into the naso-pharynx on one side of the uvula, held there a few seconds, and same upon opposite side, when surface of mucous membrane turns milky-white. Repeat until this result is obtained; these applications are to be made two or more times daily, according to the severity of the case, until the throat is free from exudate. Favorable amelioration of symptoms is noted in a few hours.

Fischer (J. A. M. A.) sums up the prophylactic measures in infantile tuberculosis as follows: (1) Insist on each infant being breast-fed; (2) if maternal nursing is impossible, secure wet-nurse; partially bottle-feeding both infants if necessary. The secret of the vitality and endurance of the tenement-house hordes is that they are, or have been, breast-fed. The two prophylactic measures are (1) breast-milk, (2) fresh air and sunshine.

Pneumonia in Infants.—NORTHUPP (Med. Record, N. Y.) summarizes the treatment as follows: (1) Castor oil to clear the field; (2) fresh air, cool and flowing; it reddens the blood, stimulates the heart, improves digestion, quiets restlessness, and combats toxemia; (3) keep baby's feet warm and its head cool; (4) plenty of water inside and out; (5) quiet and rest; (6) correct feeding to prevent fermentation and gas formation; (7) antipyretics, water only; (8) heart stimulants, fresh air, hot foot-baths, and relief of typmpany; medicinal stimulants, whiskey and strychnine.

Eneuresis.—REY (Berliner klin. Woch.) insists upon the necessity for making a urinalysis in this condition, stating that the most frequent causes are: (1) Infection with the colon bacillus; (2) an excess of ammonia salts; (3) an excess of phospates; (4) or an excess of uric acid, and suggests salol as the best drug for meeting these indications.

Pertussis.—PASSALACQUA (Med. Orientale) injected 1,000 units of diphtheria antitoxin in cases of whooping-cough, and claims improvement in seven cases; broncho-pneumonia had developed; these were also improved.

Cholera Infantum.—STERRETT says there are two important conditions to be met: (1) Cleanse and asepticise the alimentary canal; (2) determine the flow of blood to the periphery. He uses zinc sulpho-carbolate for the antiseptic, and a granule of atropia sulphate, gr. 1-250, for each year of the child's age, to twenty-four teaspoonfuls of water, giving a teaspoonful of the solution every fifteen or thirty minutes, until the skin is well reddened. If there is much depression, he adds strychnia arseniate, in the very young, brucine. If there be much pain, add codeia sulphate, at the same time practising the usual hygiene management and after-treatment.

Diet After the Age of One Year.—GRIFFITH advises that the infant should be weaned at from the age of ten to twelve months. When possible this should be accomplished gradually, only one bottle of food being given at first, and this of a strength less than mother's milk, thus enabling the child to accustom itself to the new food. The number of bottles and the strength of the mixture are increased gradually until at the age of a year the food should consist of milk slightly diluted. The child should be weighed systematically twice a week during the weaning, in order that no undiscovered loss of weight takes place. After the child has been weaned entirely and has become accustomed to the new artificial food, it is well to add to the food a concentrated amylaceous substance such as barley jelly or arrowroot jelly. The proportion of two rounded teaspoonfuls of barley or arrowroot to a pint of water, cooked in a double boiler for ten or fifteen minutes, makes the proper strength. This may be added to the food in the proportion first of one and later of several teaspoonfuls to each bottle, the addition to be made while the cereal substance is still hot. The number of feedings during this period has been reduced from three hours to three and a half or four hours, depending on the requirements and habits of the child. The amount of nourishment should be from 8 to 10 ounces at a feeding.

Deaths from Anesthesia in Childhood.—BLUMFIELD, J. (Clinical Journal, Vol. XXV, No. 16, p. 253, Feb. 1, 1905). In discussing deaths from anesthesia in childhood it is easy to confound those which are due to the anesthetics with those caused by surgical shock, hence cases should be excluded where the condition is serious before the operation is undertaken. Deaths of healthy children who are undergoing anesthesia for comparatively slight operations are by no means uncommon. It is probable that the annual mortality reports which show a considerable number of deaths from anesthesia do not represent the sum total of fatalities from this cause. Anesthesia in infants presents especial difficulties, as in these young subjects it is difficult to estimate the patient's condition. A healthy child may die during anesthesia before true anesthesia is established and before any operation has been begun. It may take place in the course of an operation, and the latter not be responsible by shock or hemorrhage for the fatality. Death may take place at various intervals after the withdrawal of the anesthetic. The explanation of the first group of cases is by no means simple, but is especially likely where chloroform is used, and it is probably caused by vagus inhibition. Another explanation is that it is due to temporary respiratory interruption due to spasm. This causes dilatation of the right side of the heart, and imperfect elimination of the chloroform, which continues to act upon the heart muscle. Whatever the mechanism, these deaths occur with terrible suddenness. They do not occur except where chloroform is used. By some it has been supposed to be due to the irritating effects of the vapor, but these syncopal deaths do not occur with ether, chloride of ethyl, or other anesthetics. Fright and terror may bring about a fatal syncope before operation. In admitting this, the question may be asked why syncopal deaths never occur when other anesthetics are used.

The second group of cases are those in which death occurs during complete anesthesia. When the operation is proceeding it might perhaps be referred to the operation, but if no important structures or large nerves are involved, and if there has been little hemorrhage, the operation itself cannot be looked upon as the cause. As a rule such deaths are not sudden, but occur by gradual failure of respiration or of the pulse which may not be appreciated, their sudden cessation alone attracting attention, which gives rise to the belief that the death was sudden. These cases should never occur, and do not with those who are constantly handling anesthetics in children. The skilled anesthetist should always be able to detect the dangerous symptoms. Where ether is used, it is only possible to produce death when there is a combination of some asphyxial influence. This may not be readily seen by the untrained. Where death occurs after the anesthetic has been withdrawn for five or ten minutes, the fatality is due to the continued action of the drug, which though inhaled some minutes before has not yet been carried from the lungs in sufficient quantity to exert its deleterious effects upon the heart or medulla. At this period food may be drawn into an insensitive larynx and may cause asphyxia. The opinion is too widely held and acted upon that in the very young chloroform is the only suitable anesthetic.

Conditions Which May Be Mistaken for Meningitis.—BAUMANN, E. P. (British Journal of Children's Diseases, Vol. II, No. 2, p. 49, Feb., 1905), says that as a rule menigitis occuring by itself is readily diagnosticated, but the difficulty is to distinguish other affections which closely resemble it. Occasionally tubercular meningitis may be mistaken for typhoid, or the complications of general miliary tuberculosis may be overlooked. With these few exceptions the diagnosis of meningitis rarely offers much difficulty.

It is otherwise with cases in which meningitis is simulated. In these cases an accurate differential diagnosis is sometimes impossible. This is due to the fact that many illnesses produce such profound disturbance of the nervous function in children. It is probable that in a large number of these cases the cerebral symptoms are caused by some toxic irritant produced in the course of the disease. The history in these cases is often misleading, such as the statement of the parent that the child has had some accident. The recent death of a member of the family of consumption is an important item, particularly if the child is soon after taken ill with meningeal symptoms. The state of the bowels is not significant, as typhoid fever in children as well as tubercular meningitis is often accompanied by constipation. Delirium marks the onset of many pyrexial conditions in children. Somnolence is of no greater importance, and headache is also not reliable, though a headache which accompanies somnolence is a suspicious symptom. Kernig's sign is of little diagnostic import. It is present in a large number of cases of true meningitis, but it may occur in a number of widely different morbid conditions. It may be absent in cases of true meningitis. In many cases it is present only at certain periods of the disease. Tache cérébrale is of still less value, for it is present in a large percentage of children suffering from trivial pyrexial and other disorders. Head retraction is of importance only when it is very pronounced, as is often the case in posterior basic meningitis. In most febrile diseases the pulse follows the temperature, and slowness of the pulse with a high temperature strongly suggests a cerebral lesion, although it does not serve to differentiate meningitis from other cerebral affections. The urine and eye-grounds should always be examined. Sometimes basic meningitis is found without changes in the disk, and distention of the veins and blurring of the disks may occur in other diseases besides tubercular and suppurative meningitis. Choroidal tubercles are sometimes seen, and are confirmative of tuberculous meningitis. Squint and nystagmus are confirmatory signs, but they occur in other conditions, and it is often difficult to be sure that a strabismus was not present before the beginning of the illness. The abdomen should be carefully examined for evidences of enteric fever or tuberculous lesions. The ears should be inspected in every case, and will frequently be found at fault. The Widal test is valuable in confirming or excluding typhoid fever. It should be repeated more than once.

Lumbar puncture is so easily carried out that it should be undertaken as a matter of routine. The cerebrospinal fluid is normally clear and translucent. Definite cloudiness or opacity signifies an inflammatory process and generally indicates suppurative meningitis. In posterior basic meningitis the fluid may be cloudy, but it contains few or no cells. In tuberculous meningitis the fluid is usually clear. It may be clear in suppurative meningitis if the passages from the cerebral ventricles to the subarachnoid space are occluded. Film preparations should be made from the fluid, and after straining examined for organisms. The cells should be counted and differentiated. Normally the fluid contains few or no cells. In tuberculous meningitis there is usually an excess of mononuclear cells. In suppurative meningitis the polymorphonuclear cells preponderate. In posterior basic meningitis there is usually slight excess of polymorphonuclear over the mononuclear cells. The fluid may also be submitted to bacteriological examination, which sometimes shows the tubercle bacillus, but more frequently the fluid is sterile. In other forms of meningitis the causative organism can frequently be cultivated. An examination of the blood for leucocytosis should be made. A count of over 25,000 strongly suggests a suppurative process, especially if the majority of the cells are polymorphonuclear.

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